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THE USE OF BOOKS.

In literary schools the use of books is given the place of first importance. The child when taught its A B C's is given a book that it may study the forms of the characters used. When these have been mastered comes the study of the thought that has been transferred to the printed page. At first the pages are divided into lessons and the pupil is examined from time to time as to his understanding of the contents of the lessons In this way the teacher learns whether or not the pupil succeeds in grasping the ideas expressed in the written words, and by supplementing them with oral explanations, corrects and amplifies the thought obtained by the pupil. The general idea of teachers in pursuing this form of instruction is the transmission to the pupil of correct ideas of literature and science, and particularly to develop his power to comprehend written language. It also deals with the use of language by the pupil, and to this end he is put to writing early in the course. This course of instruction furnishes an extended training in the use of the books which have been selected for this primary education.

This plan of study, when extended through the college curriculum, is intended to be sufficient to give the pupil such a mastery of the use of books on general literary subjects that he will be able to continue his studies independently of his teachers. That is to say, his instruction has been such that he is able to take up new books on literary subjects and obtain the thought of the authors. He is also supposed to be able to judge fairly well of the correctness and of the value of the thought expressed in books of this class, and to be able to select such books as may be best for his continued mental development. His course of instruction has, indeed, included a general knowledge of the important books in literature, though his allotted time of school work has been only sufficient for him to study a few in detail.

Such a course is supposed to be the best to fit the pupil for the beginning of professional studies. He has gained an extended knowledge of language, has become intelligent in several departments of natural science and is able to read to advantage in these fields of thought. But this has given him no knowledge of medical or dental literature. He has had no instruction as to the character or scope of the books in dentistry or medicine. Though he may have made an extended study of language, he meets strange terms at once. Many familiar words are used in a technical sense, and he finds many new words and special compounds of old words, the meaning of which must be learned before he can understand what he reads. In entering a new field of thought the pupil has entered a new field of technical language in which that thought is expressed. He must learn to read his new literature understandingly and effectively if he would master the thought it contains. In following out the general idea of educators it seems to be supposed that when a pupil has passed the school he has become sufficiently acquainted with the literature of the subjects taught to be able to read that literature effectively.

Now when a student enters a medical or dental school a radical departure is made from this general plan of instruction. The lecture takes the place of the books. When we look over the catalogues of medical and dental schools we generally find a list of books *recommended* by the faculty. With this recommendation in the catalogue all reference to books by the faculty usually ends; and the use of books by the student, if used at all, is by his own motion. Those who have passed through the curriculum of literary institutions are not the only ones admitted to medical and dental schools. Perhaps a majority have had but a part of this training, and, presumably, have not had the the advantages in the use of books enjoyed by their more fortunate comrades. No distinction between these can be made in professional schools. If admitted at all they are on equal terms.

Recently I was in company with half a dozen young physicians, all of whom were graduates of literary schools. I questioned them as to the use they made of books while at their several medical schools. All said that no one of their professors had mentioned the subject of their reading, or the books they should use during their pupilage. In answer to the question whether they used books, they all said that they did. One said that about the only attention he gave the lectures was to know the subject. He then read from three to five authors on that subject. Another said he took notes of the lectures and compared them with from one to three or four authors. Thus I found that these young men had depended on the lectures as their guide in study, but had done the real work from books. Among another group of young physicians the case stood differently. They were not graduates of literary institutions and therefore had not had the same training in the use of books. Like the others they had not been questioned as to the matter of reading. Most of them had depended entirely on the lectures except in anatomy and one or two other subjects. They had found the study of books hard work. Now which of these groups of young men were best prepared for continuous advancement in medical knowledge after entering practice, those who had made use of medical books or those who had depended entirely on lectures? There can be but one answer to this question. Skill gained in the use of medical books equips the man for future study and advancement which the sole dependence upon lectures while at school can never do.

It has happened that in these two interviews it was the college-men who had taken to books in the study of medicine. But other interviews have shown that while this is the most general rule, it is by no means universal. Some men who have but a common school education have become the most persistent users of books and masters in the art of effective reading. On the other hand many who pass the literary school throw aside their books as soon as they receive their diplomas. It is the man that wins knowledge. But the man must adopt means to that end. What other means equals the skillfull use of books? In the medical or dental college lectures are well enough; but what of the student in after years who depend only upon the lectures? What skill has he attained in the use of his professional books? What is his equipment for continued progress? If he has not become an efficient reader of professional literature he is at a great disadvantage. In order that he may continue his studies he must learn a new art, that of reading effectively. It is an art that is often difficult to acquire, but is acquired easiest and most certainly under the stimulus of college work. I hear the suggestion that anyone admitted to a medical or dental school has learned to read. Certainly they can read, all of them. But there is reading—and reading. It is one thing to read words, it is another thing to read thoughts effectively. It is the thought we wish to acquire. A person may have learned to read one class of books fairly well but will require months of effort before he can read another class of books effectively. While I should not urge a change of the lecture system now in vogue, I insist that dental students should be put to systematic reading while in school, and time provided for this work. They will be better students; but more than all else, they will be prepared to go forward with their professional studies after they leave school to enter practice.

There is a great difference between the medical and dental professions as to the use of books. The medical profession is older and more mature. It has a much more extensive library for its students to draw from. Its membership is much more habituated to the use of books. The more successful medical men are generally found to have collected extensive libraries. We cannot say this of the dental profession. There are individual dentists who have large libraries; but we generally find dentists with but few books and not given to extensive reading. Many dentists who have long held a lucrative practice have but few books.

It may be said that the dental literature is scanty. Is it not equal to the demand? Some time ago a very able dentist complained of the lack of books, and I said to him, "Why don't you write a book on operative dentistry?" "Who would buy it?" was the rejoinder. I will venture to say that when there is sufficient demand for books on any subject relating to dentistry to justify their preparations and publication they will be placed before the profession. The difficulty is with the demand. Dentists do not use the books now on hand.

There is a general complaint that the books now extant in important departments are not suited to the needs of the profession. This plea is made particularly as to operative dentistry and is probably more nearly correct in this than in any other field. To me this is very curious. Suppose I wished to start an office pupil in operative dentistry to-day, what book would I give him? I would have to fall back on the articles in the American System of Dentistry, not having any book devoted exclusively to operative dentistry that is suitable for a beginner to read. This is not the most popular work however. Another is found recommended in nearly all of the college announcements and I believe is found in more offices than any other. This is Harris' Principles and Practice of Dentistry. It is a book that has descended to us from a past age and has been patched out time and again until it reminds one of the rubbish loft of some old family who have lived in the same house for several generations without having had a fire. The original was a splendid work, and it bore good fruit. But oh, the dust of the ages have gathered on its pages now. I know of no other good book that has run such a gauntlet of revision and lived. This could not be but for the wonderful vitality of the original work and the reverence of the dental profession for the author.

In operative dentistry we have the poorest equipment in books, and in this particular field there is the greatest diversity of opinion and practice among dentists. It is probably to this that the poor equipment in books is due. There are very few men who feel that they could produce a book on this subject that would be acceptable to a majority. or even a respectable minority of the members of the profession. While this state of things exists it will be difficult to remedy the evil. How long will this condition remain with us? Probably until someone develops the genius to catch the ear of the profession and crystallize the apparent discord in operative procedure into one, two or more definite systems that will be recognized as embodying in intelligent form the best thought of the profession. In lieu of this we may have a number of books contending for favor each of which has a succint crystallization of operative procedures along definite lines of thought. This latter is probably the most desirable, as furnishing more incentive to effort and will therefore beget greater progress. If professors of operative dentistry would require that their pupils read this subject as well as listen to their lectures the deficiency in books would soon be remedied. New books would soon be demanded by practitioners as well as by pupils.

In most other departments we are better supplied with books though more are needed in all. The newer departments of crowns and bridge work have a better representation than the older operative dentistry. These may be in a degree immature and will need much revision both by addition and exclusion as time matures principles and methods. Orthodontia is also becoming well represented. But simplification of the procedures in this department promises to render much that has been written valueless. Still the pupil will find here a great diversity of plans from which to choose for adoption in practice.

Materia Medica is represented in several books. In this field the rapid introduction of new remedies necessarily renders the books imperfect in a short time. This can hardly be regarded as a drawback. Such new remedies belong properly to the Journals until their merits are fairly well established. A few years may suffice to rule them out and they would stand in the books as so much waste space.

The surgical procedures in accidents to the mouth and face and the surgical diseases of these regions are better represented in books than any other department. Pupils and practitioners have abundant opportunity for reading and a mastery of what is known. This subject is not confined to dental publications. Most of the authors of surgical treatises have entered this field of work, for here dental surgery and general surgery overlap each other.

Strictly pathology is not so well represeted in our books, which indicates either a dissatisfaction, diversity of opinion, or a lack of interest, in this department of study. Dissatisfaction with opinions in the presence of great interest in a subject should express itself in a multiplication of books. But this is not always the result as is clearly seen in operative dentistry in which lack of interest cannot be claimed.

I need not speak of other departments. All are in some way represented, some poorly, some fairly well. Every dentist can find books to read from which he can derive much information in regard to any field of practice, and the time spent in reading them will be well employed. There are many old books that should be read. There are a good many old books that ought to be reproduced in their original form ; not as books to be followed in practice now, but books that should be studied because of the excellence of the thought which they contain, and because they are mirrors of the past ages of our profession. Among these are Hunter, Carrebelli, Fox, Robinson, Fitch, Regnard, Kocker, Deserabode, and the early editions of Harris and Tomes, with many others. The study of these old authors gives one a broader view of Dentistry and a better idea of what the real advance of thought has been.

Some things cannot be obtained by reading dental literature.

Dentistry is in a large degree an art and requires finger skill for its practice. This cannot be acquired from books. One may read all of our literature and not become a dentist. The handling of instruments is acquired by practice, and the time required in learning is much shortened by personal instruction. All operative procedures should be taught first by personal instruction—by examples which are to be imitated by the pupil until he gains some proficiency in the use of instruments. This is necessary before he can grasp the ideas of the lecture or of the printed page. Then he may extend his knowledge by reading and adopt in practice the plans given in books. Personal instruction is a necessity to the beginner. The mature pupil should depend more upon books. Personal instruction cannot be continued. If the pupil has not learned to use books his education will be finished when he leaves school, or he must yet learn to use books. If he has learned to use books his education has only fairly begun.

THE JOURNAL LITERATURE.

The medical journal literature is exceedingly rich, and the dental, though not so profuse, is very full and complete. The highest object of a journal literature is to supplement books by a presentation month by month of the most recent thought. Books present more mature thought and generally in more concise form. In journals there is necessarily much that is of little value. Much of it is the presentation of impressions of something that is comparatively new to the writer, but which he thinks worthy of being placed upon record that his profession may judge of its value. It may be found important. If so others are likely to take it up, improve the thought by weeding out here, adding there, and finally the more valuable ideas will find their way into books. Therefore the journal is in advance of books in presentation of the thought of the profession. In books a subject is taken up and discussed as a whole, presented in its completeness so that the student may obtain the beginning and the end. The journal article is devoted to some thought, some particular mode of procedure in operating, or some especial pathological condition. Therefore the articles are comparatively short. They are suitable for quarter or half hour readings. It requires, however, more professional learning to read the journals advantageously than to read books Authors of journal articles take it for granted that the reader is acquainted with the literature and modes of practice, and many explanations needed by the novice are wanting. Again, so much of immature thought finds place in the journals that the reader should have acquired a fair degree of judgment as to the value of what he reads. This cannot always be regarded as an objection to the journal ; never, unless the editor is neglectful as to the character of the articles he prints. Much of the thought presented in journals is simply placed on trial, and that which my judgment, or the individual judgment of the editor, might condemn, may prove to be valuable. Many of the better in literature have been condemned at first reading by learned critics and have afterward been recognized by the world as models of thought and expression. We should not, therefore, condemn journals because some of the articles are of little value. Neither should we drop the reading of a journal because a number or two fails to interest us. The next number may contain a single article that will be worth a dozen years' subscription besides compensation for much uninteresting reading. The journal, standing as it does in the foreground of advancement, becomes an element in the make-up of every man who keeps pace with professional progress. Anyone who fails to read the journals will be behind, not only in his thought, but also in his practice. Our profession is progressive ; every year marks an advance in thought, and in the details of practice.

This advance is recorded in the journal literature and is absorbed more or less perfectly by those who read, or by each individual in proportion to his skill in reading. Those who fail to read are dependent upon occasional interviews with their fellows for any advance that accrues to them. Then is it not possible for the individual to advance by the use of his own unaided mental acumen? Such efforts remind me of two bright farmer boys who, when a rainy day came, shut themselves up in the barn and made five dollars apiece trading jack-knives. I would be the last to deny the utility of personal effort, but efforts extended along recognized lines of utility have so long given the best results that I have not much faith in those which the experience of the world has shown to bring disaster.

HOW TO READ.

How to read effectively is a serious problem. Men of my acquaintance, whom I know to be good readers, pursue different plans. Some seem to consume everything, digest it all, and in some way cast out the refuse. But the best readers I have known are not given to reading all that comes to their hands, whether in form of books or journals. These may be divided into selective readers and subject readers. The selective reader takes up his journal and notes the names of the authors of the articles. Certain ones whom he knows to be good writers are noted—" to be read ; " his eye falls upon a strange name. Who is that ? He turns to the article and looks over the pages. If he knows how to find out anything about the man he goes about it. If not, he quietly sits down to read the article and will in that way form an estimate of him. He notes the form of the title and makes up his mind what ground the article ought to cover. Then he reads slowly and carefully, noting the forms of the sentences, their completeness or incompleteness, the clearness of expression, etc. As he goes more deeply into the reading he notes the arrangement of the presentation and how the author develops the thought, whether haphazard or in a consecutive and natural sequence of thought upon thought. He may stop when half through, or if the article has pleased him, when through the reading he is apt to sketch back over it, rereading a passage here and there and arranging the thought in his own mind in the order he finds easiest for himself. Now he has probably made up his mind whether or not he will read this author afterward and will pass his articles or note them "to be read" accordingly. The authors noted "to be read" are gone over carefully and the journal is placed on the shelf with perhaps one-half or one-third of the contents read by title only. This plan of reading is the highest order of purely literary reading, but is possibly not so well adapted to professional work as some others.

The subject reader pursues a different course. He too may look for known authors or may scan closely the style of expression of thought over a new name. But he is always studying some particular subject. Not always the same snbject by any means, but one particular subject at a time and while studying this subject he reads every author he can find who has written upon it. If his journals of the current month have no articles upon his subject the articles are read by title and certain ones marked—"to be read"—perhaps the title is written in an index rerum and the journal placed in its box until a more convenient time. This man is apt to become a very persistent reader. If the opportunity offers he visits the libraries in search of authors to whom reference has been made. He borrows from his neighbors. He ransacks the old journals seeking out half-forgotten articles, and gathers together everything available on that subject. He reads certain articles many times. He makes himself master of all that has been said by writers, compares them and draws his own conclusions. Then he drops that subject for the time and takes up another which he follows in the same way.

In this way some men make themselves masters of the literature of their profession and naturally of their profession also. Such readers are now and then found to have weak spots. Some particular departments of professional work have never claimed their earnest attention and therefore have been skipped in their selection of subjects of study. But this class of men are more prone than others to become masters in their particular fields. This plan of reading when not too exclusively followed is probably the best form of professional work. It should not, however, be followed to the exclusion of miscellaneous reading for too long a period.

Still another group may be classed as spasmodic readers. Their interest is aroused on some subject and they read everything they can find. When the supply has been exhausted on that particular theme their interest is lost and reading flags and dies out altogether. After a varying period of repose during which the journals are neglected, even reading of the articles by title, another spasm is brought on by some remark or incident and another subject is read. Thus it goes on year after year.

Purely miscellaneous reading, that is, reading what comes to hand without order or method has little to recommend it. Such reading is apt to become listless and objectless. It is prone to drift into careless reading. In this case the reader may as well go fishing so far as the benefit of his reading is concerned.

To be most effective reading must be pursued for a purpose. I had nearly said that it made little difference what the purpose might be if it produced a strong impulse, but this is hardly true. I have heard of some professional men who seemed to read only to find out how little authors of books or journal articles knew about their subjects. They seemed to read only for the purpose of averse criticism. I must say that this purpose, though it may be very strong, is not favorable to the development of correct thought and the most sincere practice. I have no fault to find with sharp criticism now and then when persons hold different views. It stimulates inquiry. But when I find a person who seems to read only for this purpose I often wish he hadn't read. The gratification of literary taste is a good motive in purely literary reading, but it should form but one element in professional reading. In this field the utility motive should enter largely into the work. Many effective professional writers are but homely composers when judged from the literary standpoint. On the other hand, some excellent writers in the literary sense are not forcible writers. They are better fitted for fields of labor in which beauty of thought and expression becomes the useful element instead of the enforcement of the stern facts of pathology or operative procedures. He who reads too purely from the literary impulse or judges his authors too closely from that standard will not do the best professional reading.

The desire to know, and the stimulation which effective reading brings to this desire, coupled with conscientious practice, is perhaps the most effective impulse to professional reading. If this is spiced with a wise literary taste that will not be shocked by an author of homely but forcible phrase, all the better. Our professional study is either utilitarian or scientific and the impulse to know should overrule literary taste now and then and perhaps always stand in the foreground. The desire to know is the first element and the conscientious service of our patients is the second, and this should grow in strength as we grow in knowledge until the two become woven into a common sentiment as the woof and warp in the fabric that binds us as a bond of love to professional duty.—BLACK (G. V.), *Dental Review.*

IS DRUNKENNESS A DISEASE?

The leading physicians of Saxony at a convention recently held, made a report scouting the idea that drunkenness is the result of dypsomania or disease. They declare that men get drunk not because they are crazy, not because they are diseased, but because they will. They love the indulgence, and will not restrain their appetite though they might do so if they make the effort. On this report the authorities have taken action, and declare that drunkenness is a crime voluntarily committed to be punished like other crimes. To this the wise editor of the Journal of Commerce adds: "Here is a lesson for reformers. Let this be the motto emblazoned on their banners, 'Drunkenness is not a disease, but a crime.' The drunkard may be dealt with by moral suasion and urged to the necessary restraint. When this fails let him be treated as a transgressor of the law, and punished like other criminals. All appetites unrestrained run to excess, and the restraining power is in the will. Men get drunk not because they are diseased, but because they will not restrain their craving. We often hear it said that the inebriate must drink and cannot help it. He drinks not because he must, but because he will; he is a voluntary offender against the law of sobriety and should be dealt with accordingly." There is much truth in this as applied to some drunkards, but not to all. There are many who cannot restrain themselves because the power of inhibition has been destroyed. Possibly punishment would rouse it again in many, but others would die under it. It requires great wisdom to separate and classify these cases, and apply the correct remedy to each.—*Homœpathic News.*

DEATHS UNDER ANÆSTHETICS.

Dentists had more to do with the introduction of anæsthetics into general use than any other branch of surgery, and have, in their private practice, as well as their hospital work, as much or more to do with these agents than other members of the medical profession.

This is probably why dentists have always shown so keen an interest in the question of the relative safety of anæsthetics. But the whole world is just now ringing with the subject, and as happens, when any medical matter becomes, so to speak, public property, letters overflow from the professional press into the daily and weekly papers, and the "smart young men" who undertake to pilot the society papers through the deep waters of technical science, rush impetuously into paragraph, which, even if they lack accuracy and common sense, at least read crisply, and bring crushing censure upon "some person or persons unknown." People read this kind of writing, and as it doesn't take long to write on a subject about which one knows none of the first principles, so we may expect much more inconsequential indictments anent anæsthetics in the bronze era of literature. Gentlemen whose Cassandra warnings have escaped the professional ear appeal,—stating their name and address,—to the more emotional public reader, and reiterate their pet fads in the daily press. These are, as we have said, signs of the times, and we are bound to enquire into the matter, and ask ourselves whether the profession have not shown more than the usual professional apathy to the cries of the public. We think there has been a great deal too much of this lethargy, and we believe the ventilation in the daily press will do good. It is said often enough that fatalities should be hushed up for fear of frightening "the others." But surely the "bogey" age has gone by. The public like their daily dish of horrors, and if the new journalism points by paragraphs, and improves tragic situations by high faluting, it makes life more tolerable to the survivors, so what would you? But what does rather impress the public is that doctors differ upon such vital points as the relative safety of anæsthetics. We are then glad to see that at last some effort is to be made to collect clinical evidence upon the points at issue. Our readers will remember that we published in last summer an abstract of a paper by Dr. Dudley Buxton, which he read at Bournemouth, and which urged the necessity of treating the subject clinically, *i. e.*, from the observations made at the bedside of patients. The British Medical Association at once took up Dr. Dudley Buxton's gauntlet, and with that regard to the welfare of the profession and public at large which has always characterized that body, appointed a committee with Mr. Jonathan Hutchinson, F. R. S., as president, Dr. Pudley Buxton, Dr. Eastes, Dr. Hewitt and other specialists as members, and made a grant to cover expenses. Sub-committees have also, we learn from the Medical Association Journal, been appointed for Ireland and Scotland as well as England, and very carefully prepared books issued for the purpose of recording *every case* in which an anæsthetic is given throughout the year 1892. Surely the record, imperfect though it may be, which our daily papers gives us of the almost weekly deaths from anæsthetics point to something wrong somewhere, and if the British Medical Association's committee are able to throw any light upon this matter they will be doing a very good work and deserve all the support we can give them.—EDITORIAL, *Dental Record.*

LABORATORY-MADE FILLINGS FIXED WITH CEMENT.

Foil will always be used in small fillings of ten or fifteen minutes, but when it comes to a half hour, the system I shall propose is preferable. We will take, for example, a patient : three large gold fillings are to be inserted ; it will take at least three sittings, but often more. Prepare the cavities only at the first sitting, take an impression of them (wax is as good as the other materials), place your temporary filling of wax or guttapercha, and dismiss your patient without fatigue to the patient or to the dentist of consequence. The difference is, you intend to make a perfect filling for these three teeth in your laboratory at your leisure, independent of saliva. Mix enough plaster with fine plumbago to hold the plumbago together, and set ; oil the wax impression as for an ordinary plaster cast. While you are preparing the gold, place your mould to dry on the oil stove; use 22, fine gold, which is coin. It is fine enough for any filling; it will never change, but it will resist more attrition. The mould can be made of the plaster and plumbago alone, but small flasks in the form of the ordinary moulding would be better. The plaster mould should be tied together with a narrow band of tin, or stove-pipe iron. Your three moulds ready, and placed in convenient position, melt your gold in a small crucible, and pour quickly ; it will not do as well to have two fillings in one mould, as one or the other is likely to be imperfect. If the mould is well made, the filling requires but little trimming ; the sprue cut off, it is ready. As every dentist understands moulding, it is unnecessary to explain it. You now have three fillings ready. When the patient makes her appearance, you feel no dread of saliva ; the first filling is freed from the tooth, the cavity cleansed of wax particles, you try the fit of your gold filling, and trim so it will enter the cavity readily. Test the articulation, and trim accordingly. Everything being ready, a single napkin is all that will be needed. Mix your oxide-chloride of zinc, or other of the plastic fillings—the oxide-chloride adheres to metals very firmly, and is preferred on that account. Where it does not cause too much irritation, line the cavity with it, using but little, but enough to be pressed out. When you press in your solid gold filling, there will remain just enough to fill the imperfect adaptation of the gold, and this is what is most needed. All the fine pits and lines of the cavity are filled, which is seldom accomplished with foil, up to the thin edge of the enamel. Owing to the nice fit of the gold, there is but little oxide exposed around the walls of the cavity to be acted upon by secretions, and the action is not the same, owing to the presence of gold, which plays with zinc. It will endure as much as the tooth substance, unless too much is exposed owing to a bad fit ; in such a case, remove a little of the oxide, and fill with foil, which is the work of but a few moments. In finishing the filling do so from the centre of the filling towards the surrounding walls, as it spreads the gold over the thin line of the oxide. The antagonizing of the teeth will also spread the gold. Still there will be little danger of decomposition, as it is but a film, and preserves bone very well.

Whatever defect occurs to a filling of this kind is from the exterior. In this manner your three gold fillings are inserted at one sitting, with but little trouble to your patient, and the satisfaction to the dentist that he has inserted solid gold filling that will stand the test of time, with but one napkin. In the case of incisors, bicuspids, or any of the front teeth where the cavity is arc-shaped and cutting edge is required, it will be safer to drill a small hole through that part of the filling where, when it comes in contact with the cavity of the tooth, a shallow hole can be drilled into the tooth that will not endanger it, or give the patient much pain, of two or three threads ; then tap the end of a gold wire the size of the hole in the filling, and screw it in gently. After the oxide has hardened, cut it off and finish. Such a filing will stay, and stand to cut in molars. Where it would be deemed necessary, two screws can be inserted. In this way a large gold filling can be inserted in a useful third molar of the lower jaw. In many cases amalgam is objected to on account of the mercury, but tin is as favorable in the mouth as gold ; they can be cast in the same manner, with little trouble, as it melts easily. The technical points are hardly necessary to mention, as all practitioners are acquainted with them. But the principle of forming the fillings for large cavities in the laboratory instead of in the patient's mouth, doing away with the dangerous hand pressure, the terrible mallet, according to the patient's version of it, the fatigue of opened mouth for an hour and a half and more, clamps, dams, cords, weights, all to fight away the saliva in order to produce a solid gold filling ; this is the step in advance. As we improve we can simplify. There are many advantages in this step in advance filling,—it is a solid gold, or tin, filling, with more power of resistance than what can be produced with foil. It can be held in any form of cavity, with wire screws if it comes out ; it can be placed with fresh cement, at little expense to the patient. This will be quite an inducement to patients to have their teeth filled with gold. The foil filling will not allow to be drilled into ; this will, and the many devices that can be brought into play on account of this privilege will soon manifest itself to the dentist, who will feel confident of securing his fillings. The cavity of the tooth should be shaped so as to allow the impression to come out without drag on the wax. Time will be saved by this in the adjustment of the filling. Now we can place a solid gold filling in any tooth, in any part of the mouth, with less trouble, and a more permanent operation, than a small foil filling in the front teeth.—MARTIN (OLIVER), *Dominion Dental Journal.*

DISCUSSION OF "TRANSFORMISM."

It is a strange thing that no discovery, be it ever so great, springs up suddenly out of the brains of a single man. There is always a series of forerunners, who, in a certain line of thought, have anticipated such discoveries, and so it is with the doctrine of evolution or transformism of Charles Darwin. What is the distinguishing point between Darwin and Geoffrey St. Hilaire, Goethe and Lamarck ? Even Schopenhauer anticipated the doctrine of evolution, and still why do we attribute it to Charles Darwin himself ? There is a difference between speculation and conclusion. The facts upon which ingenious speculations of the named men were drawn were not sufficient to admit of absolute proof. This positive conclusion was at last drawn by Darwin, and it is the enormous sum of his observations that made him immortal.

The essayist has fotgotten to mention an American observer,—Agassiz, of Boston. This man, within our days, declared that he was strictly opposed to Charles Darwin's views.

Those of us who are not too pious will admit that there is the utmost probability in Charles Darwin's doctrine. He was not loth to admit that the origin of man was an unsettled point, and his views induced another great observer, Virchow, of Berlin, whose seventieth birthday we celebrated last year, to warn us against speculations and urge upon us facts and conclusions only. Do not draw conclusions too peremptorily. We have no positive right to conclude that man is the outcome of the ape. It is *not* proven yet. Perhaps Hæckel was right in maintaining this ; perhaps he is too idealistic and went too far ahead in his speculations.

Gentlemen there is, as the president has remarked, scarcely a more interesting topic than this theory of evolution or transformism. I myself have studied it for thirty-two years with the microscope ; that is, with an instrument which enables us to make fine observations, and approaches the possibility of showing to us some of the marvellous and apparently insoluble processes of nature.

Take ourselves,—man. What are we originally ? Take an oak tree, for instance ; what is that ? A little bit of a thing, at first ; compare the ovum with the adult ; watch the seed, and the plant, and the whole of the manner of their evolution. We can hardly follow this complicated process. Look into the ovum, and you will be amazed to see a very complicated structure, which we call the structure of protoplasm. There we have a mass which we call the yolk, made up of a reticular structure of living matter. In its center is the vesicula and macula germinativa,—the future man or woman. The structure of the spermatozoids, the male element of fructification, is scarcely visible except under very strong microscopical powers ; there is also a reticular structure which I claim to be the living matter proper. This structure is now shown in photo-micrographs. Although extremely small, the two elements, the ovum of the female and the spermatozoids of the male, come in contact and mix together. From the moment this occurs, a peculiar growth commences in the ovum. The ovum splits into halves, the halves into fourths, and so on, until a large number—millions—of so-called cells have arisen. In previous years it was the favorite idea of many microscopists to call the ovum a cell, and to call all outcomes the halves, and again the fourths, the sixteenths, etc., whereas I have shown that all these halves remain interconnected by means of delicate threads, and even the first elements are interconnected with one another by such minute threads. To say, therefore, that individual cells are an outcome of the segmentation is a mistake.

Quite recently I have made studies of a human embryo three to four weeks old, the thighs of which were just budding forth. We made sections of these, and saw nothing but a group of perfectly indifferent corpuscles, about which you could not distinguish anything characteristic at all. They all looked alike, and still there are produced from this bud skin, nerves, muscle, bone, vessels, etc.

In order to explain this puzzle of origin and growth, Charles Darwin established a theory which he called a provisional hypothesis. He said in our bodies, all through our lives, small particles, so-called "gemmules,' are detached from all tissues, which float in the body, and at last settle down and produce the two most important organs of generation,—the ovum in the female and the spermatozoids in the male. He himsels called it a provisional hypothesis. If nothing else would prove what this great man was, those few words do. He felt it was an hypothesis, and honestly said so. Whenever I come to speak on this topic, I cannot forget my dear old friend, Louis Elsberg. He was the first to establish what he called the preservation of the plastidules, the latter word meaning only the molecules of living matter. Before I knew him personally, he had published this beautiful theory, which meant that every ovum and every spermatozoid will contain innumerable molecules of living matter, every one of which has the properties in it, not only of the father and mother, but of the whole ancestry, and which by environments, by education, are increasing in number. This means that we are improved by learning and by education, and everything that is in us, every particle, bodily and mental as well, is deposited within the ovum and the spermatozoids. A sixth finger of the father—to give you a rough idea—or a mole on the nose of the mother are bodily deposited in the ovum, and by the mixture of both may reappear in the progeny. This theory was contradicted by Haeckel, in a very good book entitled "Perigenesis," in which he rejects these views, and lays stress upon the influence of the environments mainly. I consider the theory of Elsberg's the best ever established, and all talk and all the waste of printing ink would be superfluous from the moment we become conscious of the fact that we are but the outcome of not alone our parents, but of our whole ancestry. The rest is, however, speculation. We do not understand why, as sometimes happens, if the father is good-natured the boy is not; and if the mother is ugly, the daughter, on the contrary, beautiful. I do not wish to injure anyone's religious ideas, but from the moment we admit that there is living matter, and nothing but matter, that everything is mentally and bodily deposited in the genital parts, we approach the understanding of generation.

What makes those elements multiply and grow? Not only that, —what makes them form what they do form? A gifted dentist, Dr. Williams, who is not now in the United States, once said that the odontoblasts will form nothing but dentine, and the osteoblasts nothing but bone. Why is this? In order to explain it I will just tell you that the whole process of growth becomes explicable by assuming millions of years of education on the materialistic foundation of Elsberg's theory. A professional atheist or agnostic I am not. I never shake anyone's faith; but I am personally convinced of a materialistic basis of transformism.

What we have heard from Professor Pierce is, as he himself said, nothing but history. There are far more important points which I hope will some day be worked out by him; and permit me to draw your attention, as well as his, to some points which are original with us in America.

Let us look at the distinction between ontogenesis, which means the formation of an individual; phyllogenesis, which means three original layers of the germ, out of which the being is formed; and organogenesis, the development of the organs as such.

Ontogenesis I wish to lay aside, but let us consider phyllogenesis and organogenesis, with special reference to the development of the teeth.

In a series of articles published by Dr. Bödecker and myself some four or five years ago in the *Independent Practitioner*, of Buffalo, in the chapter relating to the development of enamel Dr. Pierce will find some remarks which, perhaps, will be considered by him worthy of some thought on his part. There we say that the outer layer or the epiblast of the germ which forms epithelia gives rise to the enamel-peg and the future enamel-organ. The outer layer being in contact with the outer world, not only furnishes us with protection, but is the basis of all future tissues of the nervous system, and of everything that we call in the future sensual organs,—vision, hearing, etc. Is it not strange that the outermost layer, evidently the most insignificant, lays at the same time the foundation of the future nervous system,—brain and spinal cord,—and is the source of future eyes, ears, etc.? If we consider the fact that all that we call sensual perception is just the reflection of the outer world into our interior, and everything in the line of direct sensual observation is the work of the brain indirectly, we can readily understand that it is the outer layer which produces those organs called the brain, the spinal cord, etc.

It is a wonderful fact that what we call a tooth is the product of two different layers, the enamel being the outcome of the epiblast or epithelium, and the dentine of the mesoblast, connective tissue. The epithelium, originally formed for the benefit of the future enamel does not remain epithelium; it changes to myxomatous connective tissue, but the fact remains that enamel originally results from epithelium. How do you explain that ?

At a certain stage of development the human embryo resembles fish ; there are gills, there is a little tail, the prolongation of the spinal column, and there is an age where you could not distinguish a human embryo from that of a dog or a pig. What, then, is the distinguishing feature ? It is the brain, the nervous system. Everything we have learned is placed again in a certain shape, bodily, in our mental organs, and it is the cerebrum which enables us to do what we do, to build railroads and steamers and telegraphs and everything we boast of. The great cerebrum distinguishes us from animals. This is, therefore, the basis of everything we are proud of. At the same time it is a source of a great deal of mischief, the greatest being that we speculate ; that we do not trust our own senses, that we are continually in doubt whether we do exist, or not,—whether the world exists, or not.

Schopenhauer, one of the most prominent German philosophers, put down the view in plain words, and all his followers, too, that nothing around us does really exist ; it merely exists in the way in which we look at it. Our " original sin " is not that we are born, but that we speculate. Take, for instance, the fish-eagle flying high up, scarcely perceptible to our eyes. It looks into a lake from a great distance, and sees a fish. Does it speculate whether it is a fish or not ? No ; it darts down and catches the fish and eats it up. We, on the contrary, speculate whether there is such a reality as a fish or a bird, and our senses are neglected. Many animals observe better than we do.

I will, in conclusion, draw your attention to the fact that there is a wide field open for the history of the development of the teeth from an organo-genetic point of view. There are certain turtles, Chelonia, which have epithelial or horny ledges for mastication ; such ledges exist also in the human embryo at the sixth week of development. Is there a Charles Darwin among you who is willing to study the history of development of a series of animals, and compare it with man ? He would have to show how it is that the horny ledges of some turtles are growing into the depth in higher animals in order to produce enamel. This is the way to arrive at positive conclusions. Thus far we can speculate only. Who can do such work ? Charles Darwin was not alone gifted with excellent senses, with an active, sharp, observing brain, but he was also endowed with the fortunes of the world, and could afford to travel around the world for five years and gather large collections of animals upon which to make studies. If such a man should ever come forward, treasures are sure to be in store for him, and he will be to the dental profession what Darwin was to the world at large.—HEITZMANN (C.), *Dental Cosmos.*

THE OFFICE BOY.

As soon as you commence practice, you require an office boy. You will find him handy to begin with, and almost every day you will discover or invent a fresh use for him. When you have no patients he will be company for you. When you have patients he will wait upon you and upon them, and they will appreciate him and willingly pay a little more—unconsciously—for his presence. He will do the menial work about the office and laboratory ; he will assist you in operating ; he will attend the door and watch the vulcanizer ; he will run errands and will care for the canary. As soon as you move in your big chair hang a canary in the window ; it will prove a mascot. He, the office boy I mean, will spread your fame ; he will let every urchin, young and old, in the neighborhood, know that he works for E. Parmly Green, the new dentist ; he will tell what a splendid man you are, and how you give him a dime for extra attentions or service. He and the bird will keep the office when you are absent ; they will not quarrel nor get lonesome ; they will entertain callers, and the boy will make appointments. When you go out to dinner or luncheon you will not feel compelled to bolt your food as if you were an anaconda,and rush back to your den with acute indigestion. You will dine in peace, and take a walk afterwards to aid the peristaltic function. You will obtain needed exercise, and occasionally knock off for half a day, or even a day, for fishing, shooting, boating, cycling or other forms of outing. You will not take the shop along either. You know Jim is there and will do his duty. But you will not call him Jim. His former companions may presume that far upon old acquaintance ; but he is now, though somewhat distantly, connected with a dignified and honorable calling; he is a sort of a sucker at the root of the professional tree, and you gravely address him as James. You almost catch yourself calling the canary Richard, but you conclude that Dick will do for a dental attache who can never get farther than to present his bill. (Copyrighted 680 B. C.)

Unwittingly to him, and partly to yourself, the office boy, if he is of the right stamp, will exercise over you a mild and wholesome restraint. You feel that you must set him an example of gentlemanly conduct; you are careful of your habits, cleanly, neat, modest, polite, good-natured. You would not have him think you a hypocrite, therefore you are as pleasant to him when alone as when outsiders are present. You would not corrupt his mind or manners, therefore you are pure in language, avoiding any approach to profanity or obscenity, and checking it in others. You know what natural babblers, or, as James might say, blabbers, boys are, and you would not give him any thing to report which could injure your reputation.

If a creature of the demi-monde visits your office, the presence of the lad will act as a brake on her tongue, and you are in less danger of scandal. By the way, the larger this sort of poison-weed crop in your field the worst for your practice. Don't cultivate it.

If you administer an anæsthetic to a female, the attendance of the office boy will help to reassure her, and if she has erotic dreams he will stand between you and unjust accusation. An honored dentist of Philadelphia, innocent of the slightest offence, spent ten years in prison from which an office boy might have shielded him. You know the sad story. By all means have an office boy.

The impressible, inquiring, receptive nature of the boy will fill you with a sense of responsibility. You will take a hand at his moral training. In doing this you will instruct, perhaps reform, yourself in some particulars. You will teach him the evil of drink and the folly of using tobacco, and it will dawn upon you that the only way to convince him of your sincerity is to abstain from such habits yourself. You will ask him about his church and Sunday School, and it will occur to you that to give him a relish for religious things you should exhibit a strong personal interest in them.

You will impress on him the wickedness of lying, and you will see more clearly your duty to your patients. How could you deceive one of them in his presence, and ever afterward look in his accusing eye? He is your monitor, your other conscience. Be faithful to your trust in placing benign influences about him. It will assuredly make you a better man, a more efficient dentist, and one of these days, under the blessing of Heaven, a worthier and happier father.

Try to disprove the old saw that no man is a hero to his valet. Make yourself appear to that boy the impersonation of all that is good, and kind, and sweet, and true, and noble in human nature. Yes, indeed, by all manner of means have an office boy. He may cost only a couple of dollars a week; he is of more service to you than a whole college faculty.

If you find you have made a mistake in the selection of a boy, correct it as soon as you are certain ; dispense with him. If he is a liar or a thief, shoot—I mean discharge—him on the spot, and inform his parents. He belongs to them, and they may be able to do something with him. Your office is not a juvenile reformatory, and you cannot afford to jeopardize your interests and those of your patients. If he is merely stupid, dismiss him with a blessing ; you have no right to retain a youngster who has no aptitude for the work, and thereby restrain him from choosing a vocation for which he might be fitted.

I have considerable more to say about the office boy in future issues ; the office girl will also receive polite attention.—*The Dentist Himself.*

THE MANAGEMENT OF DENTAL PRACTICE.

It does not fall within the province of this address to consider the value upon practice of the fundamental requisites to secure professional success,—viz., professional training ; general intelligence ; moral rectitude ; courtesy of manner, or personal neatness. Without the combined possession of these characteristics there is little probability of anyone securing a practice which would require methodical control. These elements are all so essential that at any stage of practice the loss of any of several may impair the career of anyone.

One may, however, possess these qualities and yet not secure an adequate and deserved support. He may fail to make an impression upon his community for the lack of methodical arrangement of means conducive to the encouragement of patronage. Or the demands for service may, on the other hand, become so great that, for the lack of plans to utilize time and to control the demand, he may be strangled, as it were, by the abundance of patronage.

It is to the latter condition that I shall mostly direct your attention, because I believe the means which are best calculated to control an overpressure of practice are those which will prove most valuable to anyone having the qualifications to entitle him to support, to secure the result each should aim for,—a life of effective and continued usefulness to his fellow-men.

The practice of dentistry is one requiring the closest attention to the duties involved in it by him who has assumed it. His office is to alleviate and prevent disease, and he cannot turn backward after he puts his hand to the plough. The obligation to stand ready to satisfy the demands made upon those engaged in dental practice are as imperative as are the obligations of the general physician.

Since the labor is exacting and makes the most severe strain upon the nervous forces of even the healthiest of men, it becomes every one to consider those matters which in any way may reduce this tension and maintain a state of constant efficiency.

Dental practice as usually pursued has not sufficiently regarded those economies of effort and arrangements of time which I am about to commend.

In common with others, I commend practice by attending to the cases as they were presented ; at length, as practice increased, I became hopelessly bound to conditions which overpowered me. To face the facts of strained health, deterioration of the quality of the service, and threatened reduction of income required the adoption of some system for the alleviation of these conditions.

This became established as follows :

a. In the arrangement of fixed hours for labor.

b. The avoidance of interruption, by refusing to receive calls or have consultations except at a certain hour of each day.

c. The distribution of the appointments evenly throughout the working months of the year.

d. The orderly arrangement of engagements for the care of the teeth, by which the distribution of time was effected, and also thereby to limit as far as possible the occurrence of the severe and protracted operations.

e. And at length the employment of a secretary to carry out these arrangements

The first proposition is so manifestly correct that it needs little elucidation to enforce it. It is clear that the exhaustive nature of operative service in dentistry and the limitation of physical ability quickly determines the number of hours each one should sustain continuous effort. To perform good services the condition of the operator must be so maintained that each day, and every hour of each day, he should be in fit condition for efficient service. This cannot be the case if the strain is carried beyond reasonable limits, and he who makes daily demands upon reserved force by extreme effort is in danger of impaired vigor, lessened usefulness, and a shortened life. I have found, notwithstanding the possession of a considerable degree of physical resilience, that seven hours daily effort is the limit of my capacity. The period, however, of satisfactory labor must vary with individuals, depending upon the constitutional force and the intensity of the nervous energy peculiar to each one.

To have the attention confined to the cases in hand, to avoid the waste of time by callers for consultation, and to prevent the nervous friction inevitable to the interruption of important and delicate work, the second proposition was formed. The benefits of this arrangement are beyond calculation, and it works all through the conduct of practice with satisfactory results. The justness of the principle that the engaged patient is entitled to all of the time and the undisturbed attention of the operator is a question of the simplest justice. No other consideration should overweigh this.

The attempt was followed at first by resistance and criticism on the part of some; but the manifest right of the method so appealed to common sense, that as soon as knowledge of the intention was diffused acquiescence became general. The announcement of this arrangement was printed on the appointment card thus, "that unavoidable calls are received at" a certain hour. The most convenient time for this was found to be after the consultation hour. A practice systematically conducted, however, will not have many unavoidable calls.

Another feature somewhat connected with this subject, and which was adopted before any means were attempted to reduce my practice to system, was the note printed on the engagement cards, reading, "that application for appointments should be made by note." This rule is continued in force. It is intended thus to restrict useless calls. The day is divided into three parts,—the morning from 9 to 12; the noon, from 12 to 1:30, for examinations, consultations, and rest; the afternoon, until 4:30. This gives six hours for uninterrupted effort, and I venture that if anyone will, in in a similar manner, resolutely apportion the time, the effect will give the fullest satisfaction. These six hours proceed with complete quietness and without exterior causes of friction. It is also an important consideration that this repose and privacy is especially grateful to the persons under treatment.

The even distribution of appointments was a more difficult problem. The tendency of patients, if left to their own inclinations, when not influenced by dental troubles, is towards having regular attention given to the teeth in the spring and autumn. These periods, therefore, are disposed to be overwhelmed with applications for appointments, with consequent rushing to meet the exigency of the situation. The remainder of the year may not be sufficiently occupied to be stimulating to either body or mind.

Recognizing that the need of dental service by all classes of the community is a certainty, and that the best interest of the patient and the greatest satisfaction of the practitioner is to be secured by regular service rendered to each one, I have for over twenty years maintained a regulated system of notification for renewal of appointments for the care of the teeth. To this the thoughtful and those appreciative of the value of the teeth gave ready acquiesence. Within a few years it became so general that in case anyone was overlooked it was usually considered a ground of complaint. In making such renewals I have, however, been careful to give the reasons for this course, and have been thoughtful not to trench upon the liberty of the person, since it is a natural feeling to resent being controlled by others. On the completion of each series of operations, each one, or their representative in the case of children, is informed that a re-examination should be made in from three to six months, as the apparent conditions would seem to require, and generally have accompanied this statement with the request, "Shall this, then, be done?" In such manner this system became thoroughly established. The advantages are so marked in the case of children that only by a similar method can the assurance of the preservation of the teeth from dangerous conditions be secured, and the same principle is applicable in a less degree only to adults.

The details of the method by which these appointments are distributed throughout the year are sufficiently simple. A book is kept, called the monthly index, in which months are printed on the margin instead of the alphabet. When the arrangement for the renewal is effected, the secretary enters the name of the patient at the proper month, with such symbols as may indicate the kind of appointments to be made at the new period.

The average amount of service required by each person when this system is faithfully and continuously carried out is nearly two hours, twice per year; so many requiring less than this as to give opportunity for those needing more to have the required allotment of time. With this apportionment three examination appointments made upon each day, with two subsequent appointments of one hour each, completely fills the available hours; stated in other words, seventy-eight patients per month, on the average, have their wants attended to, and are sufficient to fill all the time.

To meet the requirements of a full practice and to enable this system of management to be conducted, the employment of a secretary as an aid is an absolute necessity. The secretary should be a woman of good education, of refined manners, and of excellent tact.

She should have some knowledge of simple book-keeping, be a good penman, capable of writing a courteous note in good language, and should, above all, be thoroughly systematic.

With such an aid dental practice is relieved of many of its burdens.

In addition to carrying out the system indicated, the secretary cares for the orderly arrangement of the instruments, prepares the filling-materials, and in various ways may be instructed to give assistance. All this is not an onerous labor to an orderly woman, and such service offers a function to women who shrink from duties of a more public nature, and who from choice or need of the income desire to be of use. I cannot too strongly commend the use of women secretaries to dental practitioners. Their services tend to the maintenance and development of practice, and are far more satisfactory than aid given by male students, whose intrusions may be a serious hindrance to the growth of practice, since women and children are sensitive to the presence of male assistants.

It will be seen by those of you who will carefully consider this system of governing practice, that while the practitioner appears to be a fixed factor, he is more satisfactorily provided for than if left to the control of circumstances. It is true he is in a great measure bound by what appear to be a series of established obligations to his clientele, but he has greater freedom within those limits than would be the case without similar order. The only hour which is an absolutely binding one is that for consultations. In reference to the other hours, whatever arrangements may be needed for the treatment of individual cases may be provided for and in case the opening of an hour or the shortening of the day is needed to meet the requirements of health, there need be no reflection that one is neglecting his affairs.

This plan also allows those who are reaching the afternoon of life to lesson their labor and be free to enjoy whatever leisure they may require, and not lose any of the opportunities for practice, or appear to neglect the calls of their patients.

Heretofore I have considered only those features of practice management which concern the efficiency of the practitioner and the best interests of the patience. I have omitted any mention of the finances of the situation. As the nature of dental service is very exhaustive of nervous force and requires much skill to efficiently perform it, and the value and importance of our services to the people is great, we are entitled to high remuneration. But what shall be the initial rate? and how shall this be regulated? are serious and important questions.

The value of all material things is determined by the demand coupled with the ability of the people to pay for them. If the supply too much increases, or the ability of the people becomes impaired, the price diminishes. The same principle is applicable to a less degree only of professional services of every kind. It is the demand which at length determines the question of the income and, to a much less degree than in the case of goods, the ability of the people,—professional services not suffering in this respect in hard times nearly so much detriment as the affairs of the manufacturer or the merchant.

The same opportunity, however, does not exist for the abilities of the professional man becoming known as is the case in general business, and he has to await the occurrence of the fortuitous circumstances combined with the impression of character which shall make capacity apparent, for the world shrinks from anyone who, occupying a professional position, does by any direct effort make pretension of ability, and resists with jealousy the attempt to make capital out of events, unmasking with dreadful cruelty the pretender.

In our specialty, notwithstanding the great demand for our services, it is peculiarly difficult to secure the attention of the public, for the reason that our ministrations are private and confidential, and do not attract general attention like the pleading and counsel of the lawyer or the cures of the general physician.

The thorough performance of duty, however, and the filling of all available time for whomsoever can be found to accept service, even if it has to be done gratuitously, will, if the person possesses the essential qualities, lead him into the upward path. But this consideration does not directly meet the question of income. Shall the beginner who has marked ability charge high or moderate fees? Had he not better accept the latter than restrict the opportunity for full employment by insisting on the former? For in full employment is the road to high income, because this cultivates ability, develops character, and gives the opportunity to bring one's services within the law governing the relations of supply and demand. Many of you must have in your minds men who, because of the knowledge of their own capacity, have restricted their commencement in life by high fees, and others whose high fees being out of relation to the demands for their services, have been badly stranded. The public is intelligent, and associates facts with considerable certainty; it may be slowly, it is true, but nevertheless certainly, and its voice is potent. While the public is jealous, it is also generous, and there is scarcely any limit in reason to the reward which will be given to those deserving its confidence.

The condition of one in full practice may become critical in consequence of the overpressure for service. When all the time is regularly taken and the demand continues, further demand tends to either one or both of two things,—the deterioration of the service or diminishing income. This latter apparently paradoxical condition requires relief. In my experience I have found only one remedy, which is to raise the fees to the new patient. This should be done by notice, and be uniform to this class. The action is essentially the same as that which is daily pursued in the business world; more is asked, and if the public will bid higher a new price is fixed. Should those subjected to the increased price generally return for treatment, the indication is plain that the service is enhanced in value, whereupon the increased rate can be made general throughout the whole practice. In this manner the fees for dental services can be elevated from time to time without danger and in strict agreement with the laws which govern values, and no one is safe who goes much counter to these regulations. To be guided in the arrangement of charges for dental service by the arbitrary estimate of the value they may have in our mind, or by the assumed ability of the patient to pay, appear to be questionable principles of action. In the one case we are liable to be influenced by personal conceit, in the other we have yielded to the basest of motives,—the desire to have of the wealth of one person more than we cheerfully accept as a just rate from another person.

This brings us to the question, What shall govern the initial fee? What shall be the unit of charges? Shall it be specific for each kind of thing done? Should it be for the time spent? Or should it be an approximate standard of an hour's service?

I have held to the latter, but keeping time as the chief determining element. Given a patient of good quality,—that is, intelligent, healthy, teeth of good structure and not very sensitive,—a standard of an hour's service is easily made up.

Thus to a systematic person, whose mind goes before each action, and who, therefore, wastes no movements, an hour service becomes a nearly fixed amount of dental labor performed upon the teeth.

The varying conditions and characteristics of patients modifies the amount of service which can be rendered in any given time, and when the physical and moral deficiencies of the patient limit our performance, he becomes responsible for the time expended without relation to the amount of service. Therefore, in these instances, the value of time becomes the cost of the service. In some cases it is impossible to render the half of a standard hour's service in one hour; in such instances the patient is justly responsible for a whole hour.

What, then, becomes of the standard denominated an hour's service? It is only of use to determine the relative condition of the operator. If he fail from want of tone to render an adequate amount of service in any given time, the charge should not be for the time expended, but should be that proportion which in his conscience has an approximate relation to his habitual standard of effort. This may appear complicated in its presentation, but should come within the easy comprehension of all engaged in full practice who are of methodical bent of mind.

There is, however, no rule efficacious towards controlling the conduct of patients in the fulfillment of appointments, in their endurance of services, and other accommodating considerations, as the knowledge that they are responsibe for the time which is being consumed.

It will be observed that this method of being remunerated for service is connected with and is a part of the system of the management of practice which I have presented to you.

It is easily perceived that the application of these principles of management are more applicable to operative dentistry than to a mixed practice. However, in my own, which is almost exclusively operative, what little of it is devoted to dentures is compensated for in the same manner. The different office services connected therewith are charged for at the same rate per hour as for other service, and whatever laboratory expenses are incurred are entered up separately with adequate compensative profit in addition. For operations strictly surgical in their nature, or in orthodontia, the fees should be determined principally by the character and importance of the cases.

These principles regulating compensation for service it must be conceded raises the question from that of "get what one can" to something like a degree of uniformity and more nearly into agreement with right and regard for the interests of others. It also brings the question of fees within the comprehension of the people; and if the above method or a similar one were in general use, I am inclined to believe it would not only remove the reproach which has been cast upon us by departures from what is right and just in these respects, and would, I sincerely think, raise the general compensation for dental service. It is also my impression that such a method would induce the diffusion of patronage among a larger number of those engaged in practice.

These methods are plainly better adapted to the conditions which exist in the larger cities. How far they can be brought into use outside the centres of population is a question which can only be determined by the sentiment which is capable of being developed in each neighborhood.

There may be details of the mode of carrying out this method of management, which will be elucidated during the discussion following the reading, but which could not with propriety be introduced in this paper.—JACK (LOUIS), D. D. S., *International Dental Journal.*

SOLILOQUY OF A PLASTIDULE.

I can't go back to the genesis of plastidules any easier than can that special organism known as man satisfactorily account for his origin, and the origin of his dwelling—the earth.

Man has studied the surface of the earth and to a certain extent the position of this revolving ball in revelation to other revolving bodies which he sees by reflected light all about him in the firmament.

Man has studied himself as far as he can. He has kept tolerably good records of his actions in various countries and times for a few thousands of years. H has been very curious about his own body too, and has devised some ingenious instruments to improve his eyesight, and then he has picked his relation to pieces after they have died, and made all sorts of experiments with the different pieces. He has stained and dried and moistened and teased and sliced and illuminated these pieces till he has been able to get down pretty close to bottom facts.

He has discovered protoplasm and for years has watched it in its motion and growth in other creatures.

He has discussed it and quarreled over it and guessed about it and has believed a great many things that he could not prove. These guesses he called hypotheses and builds his faith upon them. He has made some pretty shrewd guesses too, for he has guessed that we, the *molecules* of living matter exist, which is quite true, and he has even given us a name "Plastidule." We do not call ourselves

'Plastidules,' nor do we consider it a particularly attractive name, but when man makes such strenuous efforts to get acquainted with us; when he spends years in study to find us out ; when he works so patiently with all his knowledge, accummulated mite by mite, for so many years in endeavors to see us as individuals, and acknowledges that he never expects to know more about us than can be gained by observations of what we do when congregated as squadrons, or entire communities in masses which he calls proto-plasm, why, we naturally feel kindly toward man and do not quarrel with the name he has given us. We are to him part of the great *unknown*.

We are past finding out. We seem to occupy the same relation to man, as far as his perfection goes, as does the God to whom he bows. Man studies God through what he calls the "handiwork of God," and he guesses about his "Creator," and forms images of Him in his mind of how He looks, and how He feels and thinks. He has no assurance that these images are exact—in fact he has every reason to believe that they are not, and yet he holds on to them and treasures them. He addresses prayers to them. He kneels down and supplicates, each man for himself, this god, a separate image of which he has in his mind, though he has never seen the original, and believes that his addresses will be listened to and in a measure answered.

Man can not see God but he thinks he knows that his God exists. Man can not see us—the plastidule—the molecule of protoplasm—made up possibly as man believes of still more minute and uncertain things which he calls atoms, and yet he thinks he knows that we exist, and he half suspects that we have very much to do with his past, present and future as a so-called organized being.

He does not worship us. It would look very ridiculous to us as well as to man if human beings should build churches with tall steeples and meet every now and then in these churches to offer up praise to us—the Plastidules.

Still we have the satisfaction of knowing that as men study about us more, as they spend more time guessing about us and thinking about us they have a very distinctly increased reverence for us. They reverence us as the Unknowable—the unknowable, though named, which so mysteriously envelopes the life of man.

He cannot define *life*, a word which he uses every day and thinks he knows about. He knows something about the manifestations of living beings and of living matter, and he strongly suspects that back of all these manifestations these phenomena which he studies is the plastidule. Well, so far, at least, he is right. There is a strong likeness existing between the life history of a man and the life history of a plastidule, between men and their relation to mother man. The man had ancestors away back in the dimmest past and during all that time, and now, and ever, he will be only a part of the earth, the origin of which is said to be the heat of of the sun. Every child born to man, whether he be at present of high or low degree in regard to health, or wealth or position, whether he is called king or whether he is called peasant, is an animal with a pedigree which we, the plastidule, can trace so far back into the dim past that even a description of the surface of the earth and of the condition of the atmosphere at that time can be but vaguely impressed upon the mind of the present man ; a time when with difficulty we, the plastidules, rearranged the crude carbon and the gases oxygen, hydrogen and nitrogen, the molecules of which are so unstable, into a diet for ourselves so that we could exist as individuals and make up communities like the cell, and manifest a peculiar kind of force correlated to all force and by slow and painful adaptation and re-arrangement of these same molecules and by constant effort toward perfection and harmonious action among ourselves we were enabled to unite as cells with special duties until we developed the organism which we know as man.

It has taken us myriads of years to accomplish this and yet we have remained the same and our work is going on. We are the unknown, the unknowable. Our laws of life govern all life. We exist and have always existed, for we are the *breath of life* that was breathed into the historic Adam. As the breath of life we inspire all so-called living matter whether in a one-celled micro-organism, a grain of corn, a majestic tree, a crawling worm, a buzzing insect, a chattering ape or a highly developed, intelligent man, and in this dominant creature man, this breath of life pervades the nerve cells in the cortex-cerebri making memory, imagination, reason, judgment, conscience possible to him just as it does the cells which by other modifications elaborate the shape and character of each individual's finger nails, and we are so intimately associated in each organism that the microscopic seed of that complex organism (which when properly planted is capable of producing another and similar complex organism) bears in its minute body, the impress of every plastidule in the entire body, the impress, not only of the direct parent of the seed but of past generations of parents and of all the possible crossings and variations and ramifications of past ancestral impressions. Man knows this fact and discusses the phenomena of atavism, of heredity, of a tendency to revert to a previous type. We are not only intimately associated, we plastidules, with every past and present impression made upon ourselves as we exist and have existed in the high and low of an individual and his ancestors, but we are one with all other plastidules in the entire world of organisms and man is cerrelated to all not by blood, but by the breath of life.

Through us, the plastidule, man then is a part of all life and the nearer he approaches harmonious correspondence the nearer will he fulfill his destiny.—WRIGHT (C. M.), *Ohio Journal.*

" HEAR YE."

After cleansing and drying the cavity with pellets of cotton-wool wound round the end of a crochet needle, or the eye end of a darning needle, or anything which has some kind of notch at the end to hold the cotton fast, then take another pellet of wool, about large enough to half fill the cavity, saturate it with carbolic acid, place it in the tooth, and cork it with a small piece of the white or pink gutta percha, softened in warm water, which is sold by druggists for the purpose of plugging decayed teeth. In a few hours all the nerve matter that the acid can get at will be destroyed. In some persons the gnawing pain caused by the process is very considerable, and it can be mitigated by applying a mixture of tincture of aconite and chloroform, procurable from a chemist of the right strength and proportions, to the tooth and gums adjacent. This treatment will destroy the nerves, and in most cases quite painlessly. But it will not arrest the caries, and in less than a week the heat and distress in the tooth will compel removal of the stopping to leave tension. The best way by far, as the brittle nature of the teeth in this case precludes ordinary stopping, is to ask a dentist to cut away the carious dentine and insert a gutta-percha plug or the kind described, which, in favorable cavities will last for a year ; and when the gutta-percha gets worn or dislodged by mastication, it is an easy matter to have it renewed, or even renew it oneself, after the caries has been once removed by a dentist, and the patient has had the experience of one professional stopping.—*Homœopathic News.*

"LITTLE BIRDS IN THEIR NESTS AGREE."

That some idea may be formed of the spirit generated during the present administration and culminating at this session, I give this piece of news : After the meeting closed Dr. Norman W. Kingsley wrote out his resignation and left it in the hands of the secretary. This has been forced by self-respect. From the moment Dr. Kingsley was made president a determined purpose has been forcing his administration, in order to bring defeat. Many stories were in circulation. One was this—"that fifteen members would resign ;" and a second, which seemed like a thought to go slow, that "they would remain and pay their dues and not attend the meetings." Yet each meeting has revealed the fact that no time would be lost in doing all that evil-minded men could do to destroy the harmony of the society. We say "evil-minded men," for it could not have been good-minded men that would have gone to such extremes.

The first real showing of the animus, revealed itself at the anniversary meeting in January. We will give it as it was given to us by a prominent member of the Odontological Society. "It was found that the first allotment of time for holding the anniversary meeting was going to conflict with a meeting of the committee of the World's Columbian Dental Congress committee, to be held in Chicago. An effort was made to secure the rooms in the Academy of Medicine upon dates that would not conflict with the regular meeting of the Odontological Society, but it could not be done. Then Dr. Kingsley called upon the chairman of the executive committee of this body and proposed a compromise, offering to surrender the chair to the president of the O. S. the evening of their meeting and hold a joint meeting," as most of the members belong to the First District Society. This was absolutely rejected and the result was a meeting of both societies in the same building and on the same evening, and almost an entire absence of the O. S. members from all anniversary meetings. This was made the occasion of much gossip, and no little mortification for those visiting. Much regret was expressed by men of too much influence to think that they will not resent it at a time which will surely come when the good name of our profession will be protected from such scandal, saddled upon it by an attack on a member who has contributed more in his line than any other member.

Let us ask who are to be contributors in the coming World's Columbian Dental Congress ? If not men of such ability as Dr. Kingsley, then we say fearlessly, it will be a disgrace to the management. No practitioner in New York City, and I may say in any portion of the world has better maintained the dignity of his profession, with contributions of acquired skill and the maintenance of remunerative fees. Dr. Kingsley has won a professional fame that no one can destroy by assailment, for personal motives. Only two months since such a brilliant operator as Dr. E. Parmly Brown was blackballed as a candidate for membership in the First District

Society, purely on personal grounds. What are such doings going to lead to?

It looks too much like what is being so much condemned in politics, "bossism."

It would have seemed that these intended obstacles thrown in the way of the present management of this society, would have sufficed; but no, we are told that the committee was called upon by the caterers that were to furnish a banquet and asked to pay the money in advance, as the caterers had been advised that if they did not do so they would get "left."

If these things be true, and they are, has not the good name of the society had something to test its strength? "A good name is better than riches." We predict that the party that has brought dishonor to the First District Society, will live to reap a full harvest from such seed sowing.

It was freely said that this disturbance would manifest the growth of an unfortunate animus, that would endanger the best results to be obtained at the Chicago meeting. I do not need to emphasize Dr. Kingsley's pre-eminence in our profession. It is true that he has no peer in the line of his specialty. Whatever personal grievance one may chance to have, no upright man would allow himself to place a botch upon one's true professional fame. But, it has been done by some one, and by it a flagrant discourtesy has been placed at the door of the First District Society and upon those who were the guests of the anniversary meeting. This trouble has come by its own members.—NEW YORK LETTER IN *Dental Review*.

(1) DISLOCATIONS AND (2) FRACTURES OF THE JAW.

The subject of this paper that I am going to read to you to-night on "Dislocations and Fractures of the jaw," I shall divide into two parts, viz.:

(1.) Dislocations of the jaw.
(2.) Fractures of the jaw.

Dislocation of the jaw is an accident which does not often come under the notice of the dental surgeon, as it is an occurrence which is generally treated by a general practitioner, but there are times when the dental surgeon's skill is called in, as occasionally the jaw is dislocated by the extraction of a tooth, or during the process of taking an impresssion, and at such times it would be far more credit to the dentist to reduce the dislocation rather than to have to call in a general practitioner.

As a rule, dislocations of the jaw are fairly easy to reduce at the time of the dislocation, but if they are left for some days or even hours, they will be much more difficult to reduce.

There are four forms of dislocation of the jaw, viz:

(1.) Complete dislocation.
(2.) Incomplete dislocation.
(3.) Bilateral dislocation.
(4.) Unilateral dislocation.

In complete dislocation of the jaw, one or both of the condyles have slipped out of the glenoid fossæ, and rest right in front of the articulating surfaces of the superior maxillæ.

In incomplete dislocation, the condyles have not slipped out altogether from the glenoid fossæ, but rest on the inter-articulating cartilages.

In bilateral dislocation, both condyles are resting on the inter-articular cartilages, or right outside and in front of the articulating eminence.

In unilateral dislocation, only one condyle is resting on the inter-articular cartilage, or right outside and in front of the articulating eminence, and the other condyle is in its normal position.

To diagnose a dislocated jaw is a very simple matter, and if once seen will never be forgotten.

The first thing you will probably notice is that the mouth is widely open, and that the lower jaw is thrown very much forward, which gives the patient a very idiotic appearance. There is also inability to close the mouth, the centre of the jaw may point directly forward, showing that the patient has a bilateral dislocation, or if the centre of the jaw points either to the right or left, you may be pretty sure that there is a unilateral dislocation.

The causes by which the jaw may be dislocated are many, it may be from laughing very heartily, yawning, or in eating by opening the mouth too widely, or from violence (which is generally direct), such as a sudden blow, or by having a tooth extracted.

People who are of a delicatc constitution stand a much greater risk of having the jaw dislocated, as the muscles are not nearly so strong as in a healthy and well developed person, and also women are much more liable to dislocation than men.

The treatment of dislocations of the jaw are fairly simple, excepting where the jaw has been dislocated for some time, and has become rather rigid on account of the contraction of the muscles caused by the accident.

The first method I shall mention for reducing the dislocation is, place the patient on a firm low stool or chair, then to stand behind the patient, having previously well padded the thumbs by wrapping them in lint to prevent having them bitten, then place them on the lower molar teeth, with the patient's head firmly resting against your body, you must now press downwards with considerable pressure until you can feel that you have condyles below the articulating surfaces of the superior maxillæ, then press a little backwards, and in all probability the condyles will slip back into their normal position, and as they slip into the glenoid fossæ the jaws will be brought together with considerable force, and the thumbs would have probably been badly bitten if you had not taken the precaution to pad them well at the beginning of the operation.

If you fail to get sufficient force in this manner to reduce the dislocation, you should get an assistant to stand behind the patient so as to keep the head rigid, then standing in front of the patient, and go through the same operation as when standing behind the patient, you will most likely reduce the dislocation, as you have much more power standing in front.

If you should fail to reduce the dislocation by these methods, you will have to resort to the use of a lever, which should be about a foot in length and half an inch square.

Then by placing one end of the lever on the molar teeth of the dislocated side, and by using the molar teeth of the superior maxilla on the opposite side to the dislocation for the fulcrum, raise the other end held in the hand, then, when you think the inferior maxilla is sufficiently depressed, with the other hand press back the chin, and the condyle will slip into its socket.

If the dislocation is bilateral, you will have to go through the same operation on the opposite side of the mouth.

Always after a dislocation the patient should wear a four-tailed bandage, made partly of elastic, so as to allow the jaw to be used, and at the same time to be a support as well.

After a jaw has once been dislocated, it is always liable to occur again, and patients should always be warned to be very careful not to overstrain it.

FRACTURES OF THE JAWS.

Fractures of the jaws, like all other bones, can be simple and compound.

A simple fracture is where the bone is broken with a clean fracture, without other injury to the bone or surrounding parts.

A complicated fracture is where the bone is broken in more than one place, and other complications, such as external injuries, injury to vessels, nerves, teeth and the surrounding tissues.

The inferior maxilla is much more liable to fracture than the superior, the fractures being generally caused by direct violence, such as a blow, fall, or the extraction of a tooth, &c.

The body of the jaw is much more the seat of fractures than the neck or rami of the inferior maxilla, as a blow received on the neck or ramus more often dislocates than fractures it.

The commonest place for the inferior maxilla to be fractured is in the region of the canine tooth.

A fracture of the inferior maxilla is generally compound, there being an opening on the lingual surface of the gum, caused by the rough end of the fractured bones projecting through the mucous membrane, which is not very thick, as a great part of the internal surface of the inferior maxilla is subcutaneous.

The symptoms of fractures in the maxillæ are generally fairly easy to diagnose on account of the mobility of the fractured parts by crepitation, and the irregularity in the line and bite of the teeth.

Fractures of the inferior maxilla in men are much more frequent than in women on account of the greater risk of accident in daily work. The proportion is about ten to one.

Fractures of the superior maxilla are far less frequent than the inferior and the line of fracture does not, as a rule, take any definite position, but is generally very irregular.

There is not, as a rule, much hæmorrhage in fracture of the inferior maxilla, but fracture of the superior maxilla the hemorrhage is much greater, on account of tearing of the mucous membrane of the many plates of bone which go to make it up.

Fractures of the alveolar border very often cause the teeth to loosen, and on no account should they be extracted at the time of injury.

TREATMENT :—If the superior maxilla is badly crushed it is not wise to meddle with it for a little time, so as to allow the inflammation to subside and the parts begin to heal, you will then be able to gradually bring the bones into apposition by carefully moulding the parts with the hand, you may perhaps have to use a splint but it is not always needed.

Be very careful never to remove any loose bits of bone or gum, as the power of the parts to heal and unite properly is very great on account of the good blood supply, if the teeth are very loose they may be held in position by a wire splint.

Even if the case looks almost hopeless it is surprising what a great change takes place in a few days.

One case I remember where a man was struck with great force in the region of the six upper front teeth, which caused a fracture in the line of junction of the two superior maxillæ, and there was a space between the two central incisors which looked very much as if a tooth had been extracted.

A model was taken, and after it had been sawn in two (where the fracture had taken place), the parts were brought together and a splint made to fit, this was placed in the mouth while the parts were pressed together, it was then wired to the teeth and the patient quickly recovered.

Care should be taken never to use the elevator for extracting an upper molar tooth, as you are almost bound to fracture the process in so doing.

For a simple fracture of the inferior maxilla take a piece of gutta-percha, about 6 inches long and 3 inches wide, and cut the narrow ends for about an inch and a half from the ends towards the centre, then place it in warm water until it is fairly soft, and adjust it to the chin making a kind of cup for it to rest in, having set the fracture, proceed to keep the gutta-percha in position by means of a four-tailed bandage which is made by taking a piece of ordinary bandage about 2 inches wide and a yard long, it is then folded into two, a small slit is now cut in it about 2 inches long, and each end is torn down within about 2 inches of the slit, by so doing the four tails are made, you then stand behind the patient and let the chin rest in the slit, next take the two upper tails bringing them backward along the inferior maxilla and fix the ends behind the neck, the other two tails you bring upwards to the crown of the head, and fix them about the centre of the frontal bone, finish by tying the remaining ends of the frontal to the ends of the lower bandage, thus keeping the splint in a firm position.

In setting to work to repair a fracture you should be very careful to examine the mouth very carefully at first, and to see that no teeth have been knocked out and have slipped down between the fractured parts, if such be the case the offending tooth should be removed. The next part of the operation is to take the model very carefully (in all cases be specially careful to handle your patient as gently as possible, as the pain attending a fractured jaw is very great), one of the best materials to take the model is with gutta-percha as it is much more springy and does not get so hard in the mouth as "Stent," and in removing it from the mouth it comes away much easier, and also the pain to the patient is much less.

A model of both the upper and under jaw should always be taken, and when you have the plaster cast ready, cut the model at the point of fracture, and as near as you can repair the model, making the bite articulate as near as possible with the model of the opposite jaw, a splint is made to hold the parts in position until they heal, there are three splints which are commonly used which I shall now describe, they are Gunning's, Kingsley's, and Hammond's splints.

The Gunning splint is practically two splints joined together, the way in which it is constructed is by making two ordinary splints and joining them together in the molar region,propping the bite sufficiently to allow a space to be left open in the front of the mouth, through which food may be given, and the mouth syringed out with disinfectants so as to keep it free from septic matter, which is an operation that should be well looked after, as the splint has to be worn for a considerable time, there should also be holes drilled in the vulcanite round about the necks of the teeth to allow any suppurating matter to exude through which may be washed away by syringing.

A modification of this splint can be used by simply making a splint for the fractured jaw and not capping the opposing teeth, but by letting them bite into blocks of vulcanite which prop the bite but do not cover up the teeth entirely, this is Mr. W. .Hern's method, which he says answers very well and is not nearly so clumsy as the ordinary splint, therefore it can be put in and out of the mouth with comparative ease, whereas the ordinary splint is a rather large apparatus and is difficult to get in and out of the mouth.

Kingsley's splint is made by capping the teeth in the ordinary way, and fixing a piece of thick wire along the side of the splint from the sides of the molars and bicuspids out between the lips, and then bending it back along the cheek towards and on a level with the bottom of the ear, then by fixing a bandage to one wire and carrying it under the chin and catching it in the wire of the opposite side (having previously placed a pad of wool or lint under the chin to prevent galling), bringing it back again and catching it in the wire where the bandage commenced, having done this two or three times fix the bandage and the operation is finished.

The next splint that I shall describe is the Hammond splint and which is generally considered the best, it is made of wire which may be gold, silver, or tinned iron, the last of which is the preferable. When you have the model ready, bend the wire as near as possible to the arch of the teeth so as to make a loop of wire as going all round the teeth, starting say from the buccal side of the molars and coming in front of the incisors and on towards the molars, being then brought right round the posterior wall of the last molar all along the inside of the teeth, to meet the wire at the starting point, the ends should be then soldered together and if any of the teeth are missing cross pieces from the outer to the inner wire should be soldered to strengthen the splint, the next thing to do is to place the splint into position, and by passing fine binding wire between the necks of the molar teeth catching the inside wire of the splint, then bringing the binding wire round the tooth the two ends should be twisted to hold the splint in position, these sutures are placed one on each of the first molars, first bicuspids and laterals, or any tooth that may seem fit ; if any of these teeth be missing, the jaw should be set ; you next twist up the ends of the binding wires as tightly as possible and bend the ends of the wire along the gum margin so as not to irritate the cheek or lips.

These three splints are the general ones in use.

If at any time you are called upon to treat a fracture that has been neglected, and where a lot of the bone has been lost, the jaw become "V" shaped and the articulation practically gone, you should try to expand the jaw to its normal position and replace the lost bone and teeth by an artificial denture.

Such a case I saw treated about four years ago.

The patient was a laboring man, who, as he was driving fell out of the cart and fractured his lower jaw very badly, all the lower front teeth, excepting one of the canines, were either knocked out or had to be removed, the bone also necrosed and came away, he was treated in a general hospital for a few months and sent out as cured, having the bicuspid on one side of the mouth almost meeting the canine on the opposite side.

When I saw him he had practically no biting power whatever, and only lived on soft food, etc.

He was then placed under a dental surgeon, who taking a model, a vulcanite splint was made, at the same time capping the remaining teeth, the splint was then cut in two between tbe bicuspid on one side and the canine on the other ; in this situation a wedge of compressed wood was fixed which gradually expanded the arch, the wood had to be renewed every few days until there was room to get a jack-screw in position, a new case was then made with a jack-screw inserted and after a month or so the jaw was expanded sufficiently, after having worn the splint for some time and being able to masticate fairly well on it, he had an artificial denture made to fill up the space, and can now eat as well as if nothing had happened. I saw him a few months ago, and he told me that if he leaves the case out of the mouth for a few hours or a night, he has great difficulty in getting the case back again, as the union only being fibrous there is always a great tendency of the parts to close, and on one occasion he lost his plate for just over a day, and being unable by himself to place it in its proper position, applied to the dentist, who not without considerable trouble readjusted the splint.

In conclusion, I must thank you all very much for listening to my paper, hoping you will overlook any deficiencies on my part in attempting to write a paper on so large a subject. I have also to thank Mr. W. Hern very much for all the specimens he has been kind enough to lend me to pass round for your inspection.—PRIDEAUX (MR. H. S.), *Dental Record.*

"DANGEROUS SCIENCE."

Under this caption, the *Farmers' Review* gives warning against the conclusion of Dr. Henry F. Formad, of New Jersey, who, after examination of the milk and meat of tuberculous cattle, takes a decided stand in opposition to the prevailing views upon the subject. He says that he is convinced that the dangers arising from the use of the milk and meat of cattle affected by tuberculosis, are much overdrawn. Experiments were made upon some guinea-pigs which were inoculated in the anterior chamber of the eye with milk, and after eight weeks no tubercle bacilli were discovered. He also made examination of the meat of cattle, but has never been able to find the germ. Apropos, the *Farmers' Review* says: "Some of our scientists are apt to carry their investigations of disease to dangerous conclusions; dangerous, because some people are inclined to take for granted as absolutely correct, all the finding of such men, whether it be plausible or not."

This point is well taken. It is true that numerous scientific investigations come before the public in such language as to mislead the masses. We have no doubt whatever that the results of Dr. Formad justify his conclusions, but they do not justify the conclusion that tuberculosis is not transmissible from cattle to human beings. It may be true that in the public mind, and among general practitioners, the dangers have been overestimated, but it is certainly not so among those who have studied the question closely and calmly. The many reports made to the late Congress of Tuberculosis in Paris, have demonstrated as positively as can be, in view of the nature of the malady, that tuberculosis is transmissible from animals to man, and is transmissible from man to animals, and also between animals. Dr. Formad's experiments merely prove that in his cases he has failed to transmit the disease by inoculation and to discover the germs in the diseased animal. This negative result cannot disprove the great number of positive results previously obtained by a great many investigators, of undoubted ability and of unquestionable reputation. Indeed all the negative results that can be adduced by experimentation or observation could not disprove one positively authenticated affirmative result. So it comes to this : Dr. Formad's observations show, probably, that the disease is not as universally dangerous, as far as transmission from cattle to man is concerned, as is generally supposed by the public, in the sense that perhaps not as many cases of tuberculosis originate from this source as is generally supposed. I say "*probably*," and I use the further word "*perhaps*" purposely, because the evidence is not sufficient to warrant the unqualified acceptation of the conclusion.

It requires a great number of experiments and investigations on a subject of such vast proportions and possibilities, to establish an entirely reliable conclusion. And after a sufficient number of inquiries of the most critical character have been conducted for a sufficient length of time, the fact will still remain that tuberculosis has already been contagious, therefore transmissible, and that the tubercle bacillus which is found in human tuberculosis, or consumption, and that which is found in cattle tuberculosis are identical. The disease is the same, and due to the same virus ; it follows that its transplantation is liable to take place from animals to man. No amount of research can disprove this already established fact.

The great need to-day is for scientists to put their shoulders to the wheel with more unanimity, having at heart the good of the public rather than private advancement and glorification. It is far from our purpose to attribute personal motives to the print of Dr. Formad. There is no question that his work has been done very sincerely and well. We make this remark simply because, in a general sense, when one examines the numerous monographs and publications that come to the editor's table, one feature strikes the mind at once, and that is, that the public, for whose good all scientific advancement should be directed, receives abstract reports, from which erroneous conclusions are often deduced. It is evident, from the publications of the public press, that Dr. Formad's print has resulted in creating the impression very generally, to the effect that we need not fear tuberculous cattle or milk from such animals. Certainly this is not warranted by his experiments, and we believe that Dr. Formad does not give color to any such conclusions. What the people need to be guided by, is just the reverse of this impression, which is true, viz., that tuberculosis is contagious, liable to be transmitted from animals to man, and therefore we cannot take too much care in isolating all centers of infection, no matter of what character. —Paquin (Dr. Paul), *Bacteriological World.*

TO RENDER TOBACCO HARMLESS.

Science, in a recent number, publishes the following :

" Smokers may be pleased to learn that Dr. Gautrelet, of Vinchy, claims to have discovered a method of rendering tobacco harmless to mouth, heart, and nerves, without detriment to its aroma. According to him, a piece of cotton wool steeped in a solution (5 to 10 per cent) of pyrogallic acid, inserted in the pipe or cigar holder, will neutralize any possible effects of the nicotine. In this way not only may the generally admitted evils of smoking be prevented, but cirrhosis of the liver, which, in Dr. Gautrelet's experience, is sometimes caused by tobacco, and such lighter penalties of over-indulgence, as headache and furring of the tongue, may be avoided. Citric acid, which was recommended by Vigier for the same purpose, has the serious disadvantage of spoiling the taste of the tobacco."

It is a pity that science should have to search for antidotes for poisons used by man, for absolutely no other purpose than the gratification of an unnatural appetite or passion. It may be true that the effects of nicotine will, in a manner, be neutralized by this antidote, but the fact remains that the useless appetite is not destroyed, and that the satisfaction of it must still continue to draw on the system in various ways, notably, by the extraordinary and harmful salivation.—Paquin (Dr. Paul), *Bacteriological World.*

WAXES OF VEGETABLE ORIGIN.

Of all vegetable productions, none, perhaps, offers more interest, both from a botanical as well as a commercial standpoint, than the vegetable waxes. Produced in various distant portions of the globe, their uses have become so extensive as to make them a necessary article in the mauufacture of candles, wax matches, shoes, furniture, and pharmaceutical preparations of various kinds. Through the writings of Humboldt and Andri, and the investigations by Berard, Story-Maskelyne, Piverting, and others, we have learned much of the botanical as well as of the physical and chemical characters of this interesting class of plants.

The principal regions of the globe where these waxes are to be found embrace certain portions of Western China, Japan, and tropical America, from which enormous quantities are yearly exported, the total amount of "insect wax," as it is called, shipped from Ichang, China, in 1889 being 1,539,287 pounds, the cost of which exceeded $500,000 in gold. The exportation of the Japan wax, which has only in the last thirty-five years found its way into Europe, has also, at the present time, reached extravagant figures.

VARIETIES.—The chief varieties, among which are included certain substances known as "vegetable tallows or fats," comprise the following:

1. *Carnauba wax*, called also Ceará or Brazil wax.
2. *Pela wax*, or Chinese wax.
3. *Sumach wax*, or Japan wax.
4. *Kaga wax.*
5. *Ibota wax.*
6. *Stillingia tallow*, or Chinese vegetable tallow.
7. *Myrica wax*, or myrtle wax.
8. *Orizaba wax.*
9. *Wax from stick-lac.*
10. *Bahia wax.*

Alcohol, ether, chloroform, petroleum spirit, and alcoholic solution of potash exert a solvent action on the various kinds of wax met with in commerce, and the behavior of the solutions with solution of ammonia and with alcoholic solutions of lead acetate and of ferric chloride has formed a means of distinguishing them from one another. The process is as follows: a sample of the wax is heated with ten times as much chloroform to boiling, and, when completely dissolved, cooled in cold water.

1. The chloroform solution remains clear after cooling.

A. Ether dissolves completely.

(*a*) Alcoholic solution of ferric chloride gives, with the alcoholic solution of the wax, a precipitate insoluble on heating—*wax from Myrica quercifolia.*

(*b*) Ferric chloride colors alcoholic solution black—*wax from undetermined species of Myrica.*

(c) Ferric chloride colors brownish but gives no precipitate—*wax from Myrica Cerifera; wax from Orizaba.*

B. Ether dissolves only a part. A sample is boiled with ten times the quantity of alcoholic potash solution till saponified, and the soap heated with 100 volumes of water.

(*a*) The soap is completely soluble—*Japanese wax.*

(*b*) The soap is partially soluble—*African beeswax*.

II. The chloroform solution becomes cloudy on cooling.

A. Alcoholic solution of acetate of lead gives, with the alcoholic solution of the wax, after a few minutes' standing, a cloudiness—*wax from stick-lac.*

B. Alcoholic solution of acetate of lead gives no cloudiness.

(*a*) The ethereal solution of the wax becomes cloudy on the addition of an equal volume of alcohol.—*Brazilian wax.*

(*b*) The ethereal solution remains clear—*Bahia wax.*

Carnauba wax, or Brazilian wax, is found upon the leaves of the *Copernicia Cerifera*, which grows extensively in Brazil and Paraguay, from which countries the wax is largely exported. It has been suggested that the word carnauba is probably derived from two words common to the Spanish and Portuguese—*carne*, flesh, and *uva*, grape, in allusion to the fleshy berries, which resemble to some degree the grape.

The tree itself is very striking in appearance, throwing up a straight, smooth and slender trunk, sometimes to a height of 50 feet, from 6 to 8 inches in diameter, and surmounted by a crown of large, fan-shaped leaves, which resemble those of the Southern palmetto, and of which so many fans and palm-leaf hats are manufactured.

The inflorescence is polygamous. The flowers are small, white, silky-downy, in immense panicles, the lower part of the flower stalk being at first enclosed in a stiff, husk-like spathe, which soon drops off, and each branch of the panicle in a secondary spathe. The wax is secreted by scales situated in the axillæ of the leaves, and is found on both surfaces of the scales, that on the upper surface readily detaching itself, and falling to the ground when the tree is shaken. This is not the way it is collected, however; but the young leaf buds and scales are cut off, dried for a few days in the sun, then cut into pieces and powdered until all the powdery part has fallen out. This is melted in earthen vessels with a little water, and then forms the crude carnauba wax.

Carnauba wax forms a hard, brittle, amorphous, straw-yellow mass. It has a specific gravity of 0.999 and melts at 83° to 84° C. (184° F.). It consists mainly of compound ethers of melissyl alcohol, $C_{30}H_{62}O$, which may be obtained from it in considerable quantity by saponification; it also contains another alcohol, $C_{23}H_{48}O$, small quantities of resin, and a substance melting at 105° and having the composition $C_{39}H_{82}O_3$. But, according to Berard,* that portion of the wax which is soluble in alcohol is free from cerotic acid, $C_{27}H_{54}O_3$, while the remainder corresponds to melyssic ether.

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*Bull. Soc. Chim. [2] ix, 41.

The wax is used, mixed with tallow, for the manufacture of candles, which are prepared in Brazil in a most primitive way. They have a yellow or dark brown color, it being very difficult to deprive the wax of its coloring matter. It is also extensively used in Europe and in the United States for preparing varnishes, waxed leathers, etc. In consequence of its great hardness it is employed to harden beeswax and stearin in the manufacture of candles. It is employed by furniture polishers and brass finishers to give a polish to their wares, and can be used to wax floors. It has been found serviceable recently in insulating electric wires.

The following reference to a Chinese variety is from a recent U. S. consular report :

The "insect wax," or "white wax," of China, is a product of the western part of the province of Sze-Chuen and of parts of the adjoining province of Koei-Choo. It is, however, in the Chien-ch'ang valley, on the An-ning River, in Western Sze-Chuen, that the wax insect most flourishes and finds its food most abundant. The whole subject of white wax was, by the direction of the English Foreign Office, thoroughly investigated by Mr. Hosie, her Majesty's consular agent at Shun-King, in Sze-Chuen, and from his report thereon the following account is taken :

It seems that in Western China, not far from the Thibetan frontier, flourishes a tree called by the Chinese "evergreen tree."

It is, in fact, an evergreen with "leaves springing in pairs from the branches ; they are thick, dark green, glossy, ovate and pointed. In the end of May and beginning of June, the tree bears clusters of small, white flowers, which are succeeded by fruit of a dark purple color." It has been classified by the authorities of the Kew gardens as *Ligustrum lucidum.* Early in the spring there appear on the bark of the boughs and twigs of this tree numerous brown, pea-shaped scales. Upon opening these they are found to contain a mass of small animals, like flour, whose movements are almost imperceptible. These are the larvæ deposited by the white wax insect, whose scientific name is *coccus pela.* These shells or scales are gathered by the Chinese about the end of April and carried to the prefecture of Chia-ting, the centre of this industry, about 200 miles from the Chien-ch'ang valley. For this journey they are wrapped in packages, each containing about 16 ounces. The utmost care is taken to protect them from the heat, as the time of the development of the larvæ into insects is near at hand, and when this occurs they make their escape.

In the vicinity of the city of Chia-ting is a plain, described by Mr. Hosie as an immense rice field.

Almost every plot of ground on this plain, as well as the bases of the mountains, is thickly edged with stumps, varying from 3 or 4 to twelve feet in height, with numerous sprouts rising from their gnarled heads. These stumps resemble at a distance our own pollard willows. The leaves spring in pairs from the branches; they are light green,. ovate, pointed, serrated, and deciduous. The identity of this tree is uncertain, but it is supposed to be a species of ash, the *Fraxinus chinensis.* It is called by the Chinese "paila shu," or white wax tree.

The white wax scales, upon arrival, are made up into small packages wrapped in leaves, about twenty or thirty scales in each package, and suspended under the branches of the tree. Holes are punched in the leaves which constitute their covering, and the insects, on emerging from the scales, creep up the branches to the leaves of the tree, among which they remain thirteen days. They then descend to the branches and twigs, "on which they take up their positions, the females, doubtless, to provide for a continuation of the race by developing scales in which to deposit their eggs, and the males to excrete the substance known as white wax." It is supposed that the wax is intended by Nature to protect the scales.

The first appearance of the wax on the under sides of boughs and twigs resembles snow, but it gradually spreads over the whole branch to the depth of one-quarter of an inch. At the expiration of one hundred days from the placing of the insects on the wax tree the deposit is complete. The branches are then cut off. As much wax as possible is removed by hand, but to secure what remains, the branches are afterward boiled. This boiling of the branches destroys the scales and their larvæ, thus necessitating the bringing of fresh scales the following year from another locality, as above described. A pound of scales, it is said, will produce four or five pounds of wax.

The wax scraped off is put into boiling water, where it melts, and, rising to the surface, is skimmed off and put into moulds. Here it solidifies, and the work of manufacture is complete. The insects, which have sunk to the bottom of the pot, are pressed out, and, when the wax has all been extracted from them, are fed to the pigs. A ton of this wax is worth at Shanghai about £200.

A tree from which the branches have been removed is not available again for three years. If the wax is left on the tree, the male insects buried under it undergo a metamorphosis, emerging with wings in the autumn and flying away.

This article has an intrinsic value, and not a fictitious one derived from fantastic ideas as to its medicinal qualities. It is, in fact, a substance of great utility, in common use in China. It is a clear white wax, which melts only at a high temperature (160° F.), and is chiefly used to cover candles made of animal and vegetable tallow, to prevent too rapid combustion. It is used in some localities as a sizing for paper and cotton goods, a glaze for silk, and polish for furniture. It is also said to be used in Southern China as a polish for stone ornaments. The reported figures of its export give only a partial idea of the proportions of the industry. Immense quantities are shipped from the ports of the Upper Yang-tse in Chinese junks, and some are sent across the mountains and via the West River to Canton. It is much used there, where thousands of pounds of it, in large round cakes, are stored away in a single room.

The introduction of foreign kerosene, now so universally used in China, has had a discouraging influence on the production of white wax. Kerosene lamps afford a cheaper light than tallow candles, and the constantly increasing use of oil diminishes the demand for wax. This affords but another example of the silent but ceaseless revolution which the entrance of foreigners into China has inaugurated in every branch of native trade. It is possible, however, that a use for this wax may be found abroad to re-establish the interesting and once flourishing industry.*

Japan Wax.—This wax, which is produced in Japan and chiefly exported to England, is obtained from the berry of the wax tree. This tree, not unlike the juniper tree, flourishes more especially in the southern provinces of the empire. The three principal sources in Japan are the *Rhus succedanea*, the *Rhus vernicifera*, and the *Rhus sylvestris*.

The *Rhus succedanea*, when fully developed, attains a height of about 29½ feet, and has a short trunk reaching a circumference of 39½ inches. It is covered with uniform gray bark, and has yellow wood, which contains bright sap, turning dark or black on exposure to air. The ramification is not profuse, and the leaves are placed close together at the ends of the branches. Their color is a handsome green, which turns red in autumn. Measuring from about 5¾ to 7¾ inches in length, they are imparipinnate, and have round, naked petioles. The leaflets, which form about four to six pairs, are placed opposite, being naked and rather tender. Some samples are said to have serrated leaflets.

The fruit, which usually ripens about the month of October, is gathered when ready, and cleansed from its loose outer husk—a process which is accomplished in large wooden vessels with wooden maces, similar to those in use for cleaning rice. The residual product, available for the manufacture of wax, is a bean-shaped kernel about the size of a lentil, possessing an unusual degree of hardness, of a dark-yellow wax color, and presenting a saponaceous exterior to the touch. The kernel is exposed in a sufficient degree to a steaming process, which deprives it of its extreme hardness and allows of its oily properties being more easily extracted in the pressing stage. In this process the oil is received into small earthen vessels, in which it subsequently hardens to a bluish-green mass, in the shape which it is commonly met with in home consumption.

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*U. S. Consular Reports.

Wax thus produced is impure, and is only suitable for certain descriptions of candles and for wax thread manufacture for home use. In order to render it merchantable for the exporter, the following refining process is resorted to: The wax is boiled with lye until it is brought to a perfectly liquid state, and is then drawn off into a reservoir filled with clear water, the pure wax, which floats upon the surface, being removed. The wax is then bleached by being exposed to the sun's rays for about fifteen days, at the end of which time the wax presents a dirty-white, crumbling appearance, and a strong tallowy smell. The boiling and bleaching are repeated, with the view of rendering the refining process still more complete, the only difference being that, instead of lye, pure water alone is used in boiling it. The product is a clear white powder having an almost crystalline formation. The last stage of preparation for export consists in rendering the powder a compact mass, which is effected by melting it over a fire with a little water and running it off into flat vessels. The product thus obtained, known to commerce as "vegetable" wax, differs very little from white beeswax, with which it possesses the properties of color, brittleness, and similarity in its fan-shaped fracture. The only characteristic difference may be said to be in the odor, the beeswax giving off a refreshing, aromatic scent in burning, while the tallowy smell of the Japan wax is far from being agreeable. When formerly imported this wax came in round cakes about 12 Cm. (4⅞ inches) in diameter and 2.5 Cm. to 3 Cm. (1 to 1$\frac{3}{16}$ inches) in thickness, but at the present time we see it in squares, cakes, and blocks of about 143 pounds each.

When freshly broken the surface is almost white, sometimes slightly yellowish-green. At the surface it has a hoary appearance, owing to a shiny, crystalline white down. Impure qualities appear in the market occasionally in dark yellow lots, fetch a lower price, and turn darker more readily than the white variety. After being preserved for some time in solid condition, the melting point is at 52° to 53° C.; but a recent solidified sample melts at 42° C. The specific gravity of the bleached substance is somewhat above that of water. Boiling alcohol (97 per cent.) dissolves it easily, but deposits it nearly all again on cooling, retaining only 3 per cent. in solution. Warm ether likewise dissolves it readily, but deposits it in flakes or granular masses on cooling.

The preparation of the wax forms one of the principal industries of Kiu-Siu. The best wax is produced in Kumamota, but does not appear in Commerce, as all of it is sent to the imperial court. The best commercial wax is made in the province of Hizen and brought into commerce via Ozaka. The traders in that place are more skilful in purifying and bleaching the wax than the peasants of Kiu-Siu.

In Japan it is largely used for making candles and hair pomade. The sap of the *R. vernicifera* being also largely employed for the manufacture of lacquered wares.

Kaga wax is obtained from the *Cinnamomum peduneulatum*, which grows in Japan. It is softer than Japan wax and is not seen abroad.

Ibota wax is produced by an insect upon the *Ligustrum ibotu ;* it is a very fine white wax, but rarely gets into foreign markets.

Chinese vegetable tallow, or stillingia tallow, is prepared from the seed kernels, or more likely from the fruit capsules, of the *Stillingia sebifera* Mart. in China. It forms a soft, white, granular mass, which is used in China for making candles. Its melting point is 37° C.

Myrtle wax, or myrica wax, is made from the fruit of *Myrica cerifera.* It melts at 47.5° to 49° C.—*American Druggist.*

WORLD'S COLUMBIAN DENTAL CONGRESS—COMMITTEES—SECRETARY'S NOTE.

COMMITTEES TO DATE.

*Declined.

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Secretary—Dr. A. O. Hunt, Iowa City, Iowa.
Treasurer—Dr. John S. Marshall, 9 Jackson St., Chicago, Ill.
Dr. W. J. Barton, Paris, Texas.
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Dr. H. J. McKellops, 2630 Washington Ave., St. Louis, Mo.
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Dr. H. B. Noble, N. Y. Ave., Washington, D. C.
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Dr. C. S. Stockton, Newark, N. J.
Dr. L. D. Shepard, 330 Dartmouth St., Boston, Mass.
Dr. J. Taft, 7th St., Cincinnati, Ohio.

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Arthur E. Matteson, 3700 Cottage Grove Ave., Chicago, Ill.
E. M. S. Fernandez, 103 State St., Chicago Ill.

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E. M. S. Fernandez, 103 State St., Chicago.
Geo. A. Christmann, Staats Zeitung Building, Chicago.
James McManus, 32 Pratt St., Hartford, Conn.
Elisha G. Tucker, Boston, Mass.
John D. Thomas, 912 Walnut St., Philadelphia, Pa.
H. J. McKellops, 2630 Washington Avenue, St. Louis.
L. L. Dunbar, 500 Sutter St., San Francisco, Cal.
V. E. Turner, Raleigh, N. C.
Joseph Bauer, 130 Esplanade St., New Orleans, La.
J. F. P. Hudson, 19 West 39th St., N. Y. City.
W. P. Dickinson, 608½ Nicollett Ave., Minneapolis, Minn.
C. F. W. Holbrook, 34 Park St., Newark, N. J.
W. J. Foster, 9 West Franklin St., Baltimore, Md.
R. M. Sanger, East Orange, N. J.

No. 6.

REGISTRATION.

Chairman—Fred A. Levy, 343 Main St., Orange, New Jersey.
E. L. Clifford, 401 West Monroe St., Chicago, Ill.
Geo. N. West, 34 Monroe St., Chicago, Ill.
J. Y. Crawford, Nashville, Tenn.
C. V. Rosser, Atlanta, Georgia.
T. L James, Fairfield, Iowa.
W. H. Fundenburgh, 323 Pennsylvania Ave., Pittsburg.

No. 7.

PRINTING TRANSACTIONS—TO BE APPOINTED.

No. 8

CONFERENCE WITH STATE AND LOCAL SOCIETIES.

Chairman—J. Taft, Cincinnati, Ohio.

LIST OF STATE COMMITTEES.

Alabama—E. S. Chisholm, Tuscaloosa, Chairman.
A. Eubank, Birmingham.
Chas. P. Robinson, Mobile.
G. M. Rousseau, Montgomery.
Alaska——————
Arizona—L. N. Goodrich, Phoenix, Chairman.
D. Pentland, Prescott.
J. Hardy, Phoenix.
W. Warnekross, Tombstone.
Arkansas—M. C. Marshall, Little Rock, Chairman.
W. B. Pollard, Hot Springs.
L. K. Land, Pine Bluff.
R. D. Seals, Fort Smith.
A. E. Kimmons, Fort Smith.
California—C. L. Goddard, San Francisco, Chairman.
W. J. Younger, San Francisco.
E L. Townsend, Los Angeles.
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W. E. Griswold, Denver.
H. P. Kelly, Denver.
R. B. Weiser, Georgetown.
Connecticut—E. S. Gaylord, New Haven, Chairman.
Jas. McManus, Hartford.
R. W. Browne, New London.
Delaware—C. H. Gilpin, Middleton, Chairman.
C. R. Jefferis, Wilmington.
Dist. of Columbia—Henry C. Thompson, Washington, Chairman.
R. B. Donaldson.
J. Hall Lewis.
L. C. F. Hugo.
H. M. Schooley.
Florida—J. N. Jones, Jacksonville, Chairman.
James Chace, Ocala.
Duff Post, Tampa.
I. J. Welch, Pensacola.

List of State Committees.—*Continued.*

Georgia—S. B. Barfield, Macon, Chairman.
John H. Coyle, Thomasville.
H. H. Johnson, Macon.
W. C. Wardlaw, Augusta.
Idaho—E. L. P. Ector, Moscow, Chairman.
John H. McCallie, Moscow.
A. Boston, Lewiston.
Illinois—W. H. Taggart, Freeport, Chairman.
C. N. Johnson, Chicago.
J. J. Jennelle, Cairo.
Indiana—J. B. Morrison, Indianapolis, Chairman.
P. G. C. Hunt, Indianapolis.
S. B. Browne, Fort Wayne.
Indian Ter.——————
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S. C. Hatch, Sioux City.
L. K. Fullerton, Waterloo.
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Andrew G. Friedericks, New Orleans.
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Maryland—E. P. Keech, Baltimore, Chairman.
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Edward Nelson, Frederick.
Massachusetts—D. M. Clapp, Boston, Chairman.
W. H. Potter, Sec'y.
Eugene H. Smith, Boston.
S. G. Stevens, Boston.
D. B. Ingalls, Clinton.
R. R. Andrews, Cambridge.
Michigan—C. S. Case, Jackson, Chairman.
Geo. L. Field, Detroit.
F. L. Owen, Grand Rapids
Minnesota—T. E. Weeks, Minneapolis, Chairman.
M. G. Jenison, Minneapolis.
C. H. Robinson, Wabasha
Mississippi—Morgan Adams, Sardis, Chairman.
R. K. Luckie, Holly Springs.
J. D. Miles, Vicksburg.
G. B. Clements, Macon.

List of State Committees.—*Continued.*

Missouri—C. L. Hungerford, Kansas City, Chairman.
A. H. Fuller, St. Louis.
J. D. Patterson, Kansas City.
Montana—C. S. Whitney, Miles City.
Nebraska—H. T. King, Fremont, Chairman.
A. W. Nason, Omaha.
H. C. Miller, Grand Island.
H. J. Cole, Norfolk.
I. W. Funck, Beatrice.
Nevada—A. Chapman, Virginia City Chairman.
M. A. Greenlaw, Reno.
S. S. Southworth, Carson City.
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G. A. Young, Concord.
Wm. Jarvis, Claremont.
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New Jersey—S. C. G. Watkins, Mont Clair, Chairman.
B. F. Luckey, Paterson.
R. M. Sanger, E Orange.
New Mexico————
New York—John I. Hart, New York City, Chairman.
K. C. Gibson, New York.
W. Carr, New York.
M. L. Chaim, New York.
Chas. Butler, Buffalo.
F. A. Remington, New York.
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J. H. Durham, Wilmington.
J. F. Griffith, Salisbury
North Dakota—S. J. Hill, Fargo, Chairman.
S. P. Johnson, Grand Forks.
W. O. DePuy, Bismarck.
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E. M. Pierce, Hillsboro.
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H. F. Harvey, Cleveland.
M. H. Fletcher, Cincinnati.
L. E. Custer, Dayton.
A. F. Emminger, Columbus.
Oklahoma Ter.—D. A. Peoples, Guthrie, Chairman.
G. F. Dean, Oklahoma City.
J. S. Nickolson, El Reno.
Oregon—S. J. Barber, Portland, Chairman.
E. G. Clark, Portland.
Pennsylvania—L. A. Faught, Philadelphia, Chairman.
C. S. Beck, Wilkesbarre.
J. A. Libbey, Pittsburg.

LIST OF STATE COMMITTEES.—*Continued.*

Rhode Island—————
South Carolina—Thos. T. Moore, Columbia, Chairman.
W. S. Brown, Charleston.
A. P. Johnstone, Anderson.
B. H. Teague, Aiken.
South Dakota—O. M. Huestis, Aberdeen, Chairman.
C. W. Stutenroth, Watertown.
F. W. Blomily, Sioux Falls.
Tennessee—H. W. Morgan, Nashville, Chairman.
B. S. Byrnes, Memphis.
W. H. Richards, Knoxville.
H. E. Beach, Clarksville.
Texas—W. R. Clifton, Waco, Chairman.
G. M. Patten, Galveston.
Tom Robinson, Houston.
Geo. S. Staples, Sherman.
T. L. Westerfield, Dallas.
H. J. McBride, Tyler.
Utah—A. S. Chapman, Salt Lake City, Chairman.
A. B. Dunford, Salt Lake.
F. W. Baker, Ogden.
Vermont—G. F. Cheney, St. Johnsbury, Chairman.
Thomas Mound, Rutland.
R. M. Chase, Bethel.
Virginia—J. Hall Moore, Richmond, Chairman.
W. W. H. Thackston, Farmville.
Jos. R. Woodley, Norfolk.
E. P. Beadles, Danville.
T. H. Parramore, Hampton.
D. W. Rust, Alexander.
Washington—W. E. Burkhardt, Tacoma, Chairman.
F. P. Hicks, Tacoma.
J. C. Grasse, Seattle.
West Virginia—H. H. Harrison, Wheeling, Chairman.
Jno. H. McClure, Wheeling.
H. K. Jones, Parkersburg.
George I. Keener, Grafton
J. N. Mahan, Charleston.
Wisconsin—B. G. Marcklein, Milwaukee, Chairman.
C. C. Chittenden, Madison.
Geo. H. McCausey, Janesville.
Wyoming—Waiting for nominations.

No. 9.

HISTORY OF DENTAL LEGISLATION IN THIS AND OTHER COUNTRIES.

Chairman—William Carr, New York City, N. Y.
Paul Dubois, 2 Rue d'Amsterdam, Paris.
F. Busch, Berlin, Germany.
J. H. Mummery, London, England.
M. Etcheparaborda, Beunos Ayres, South America..

No. 10.

AUDITING.

Chairman—L. D. SHEPARD, Boston, Mass.
R. R. ANDREWS, Cambridge, Mass.
CHAS. A. MEEKER, Newark, N. J.

No. 11.

INVITATION.

Chairman—W. C. BARRETT, 208 Franklin St., Buffalo, N. Y.
E. T. DARBY, 1513 Walnut St., Philadelphia, Pa.
S. G. PERRY, 46 West 37th St., New York City.
W. C. WARDLAW, Augusta, Georgia.
S. W. DENNIS, 81 Flood Building, San Francisco, Cal.
*THOS. H. CHANDLER, 161 Newbery St., Boston, Mass.
J. D. PATTERSON, Kansas City, Mo.

No. 12.

MEMBERSHIP.

Chairman—EDMUND NOYES, 65 Randolph St., Chicago, Ill.
B. F. LUCKEY, Paterson, N. J.
E. S. CHISHOLM, Tuscaloosa, Alabama.
C. M. BAILEY, 28 Syndicate Block, Minneapolis, Minn.
DAN'L N. MCQUILLEN, 1628 Chestnut St., Philadelphia, Pa.

No. 13.

EDUCATION AND LITERARY EXHIBITS.

Chairman—J. J. R. PATRICK, Bellville, Ill.
J. Y. CRAWFORD, Nashville, Tenn.
A. H. FULLER, 2602 Locust St., St. Louis, Mo.
C. A. BRACKETT, 102 Truro St., Newport, R. I.
B. H. CATCHING, Atlanta, Ga.

No. 14.

CLINICS IN OPERATIVE DENTISTRY AND ORAL SURGERY.

Chairman—C. F. W. BODECKER, 60 East 58th St., N. Y. City.
*J. E. GARRETSON, Philadelphia, Penn.
JOHN S. MARSHALL, 9 Jackson St., Chicago, Ill.
ARTHUR B. FREEMAN, 325 West Madison St., Chicago, Ill.
H. H. SCHUMANN, 240 Wabash Ave., Chicago, Ill.
HENRY W. MORGAN, Nashville, Tenn.
WILLIAM CRENSHAW, Atlanta, Georgia.

No. 15.

PROSTHETIC DENTISTRY.

Chairman—S. H. GUILFORD, Philadelphia, Pa.
L. P. HASKELL, 211 Wabash Ave., Chicago, Ill.
A. P. JOHNSTONE, Anderson, South Carolina.
W. N. MORRISON, St. Louis, Mo.
FRED C. BARLOW, 646 Jersey Ave., Jersey City.
J. HALL LEWIS, 1309 F St., N. W., Washington, D. C.
A. O. HUNT, Iowa City, Iowa.
R. R. FREEMAN, Nashville, Tenn.
E. S. GAYLORD, New Haven, Conn.

No. 16.

ARRANGEMENTS.

Chairman—E. S. Talbot, 125 State St., Chicago, Ill.
F. H. Gardiner, 126 State St., Chicago, Ill.
C. N. Johnson, Opera House Building, Chicago, Ill.
D. B. Freeman, 4000 Drexel Boulevard, Chicago.
H. J. McKellops, 2630 Washington Ave., St. Louis, Mo.

No. 17.

ESSAYS.

Chairman—E. C. Kirk, Philadelphia, Pa.
J. W. Wassall, Chicago, Ill.
A. H. Thompson, Topeka, Kansas.
H. H. Johnson, 26 2d St., Macon. Ga.
L. G. Noel, Nashville, Tenn.

No. 18.

HISTORY OF DENTISTRY IN THE UNITED STATES.

Chairman—J. Taft, Cincinnati, Ohio.
Louis Jack, 1315 Locust St., Philadelphia, Pa.
F. T. VanWort, Brooklyn, N. Y.
F. J. S. Gorgas, Baltimore, Md.
H. L. McKellops, 632 Sutter St., San Francisco, California.
E. G. Betty, Cincinnati, Ohio.
J. B. Patrick, Charleston, South Carolina.

No. 19.

NOMENCLATURE—TO BE APPOINTED.

No. 20.

APPOINTMENT OF DENTAL SURGEONS IN THE ARMIES AND NAVIES OF THE WORLD

Chairman—M. W. Foster, Baltimore.
B. Holly Smith, Baltimore.
Geo. Cunningham, Cambridge, England.
De Gallippe, Paris.
Adolph Weil, Munich.
*J. B. Wilmott, Toronto, Canada.
Jno. E. Gievers. Amsterdam, Holland.
E. DeTrey, Vevey, Switzerland.
A. Szigmondy, Vienna.
O. Mela, Geneva, Italy.
V. Haderup, Copenhagen.
O. J. Chrustchow, St. Petersburg, Russia.
Alex. McG. Denham, Monjitas 68½, Chili.
Geo. B. Newland, 107 Calle Florida, Buenos Ayres.

No. 21.

CARE OF THE TEETH OF THE POOR.

Chairman—W. J. Barton, Pavis, Texas.
C. A. Brackett, Newport, R. I.
*G. S. Dean, San Francisco.
T. D. Ingersoll, Erie, Pa.
W. M. Fisher, Dundee, Scotland.

No. 22.

BIOLOGY AND BACTERIOLOGY.

Chairman—R. R. ANDREWS, Cambridge, Mass.
M. H. FLETCHER, Cincinnati, Ohio.
W. X. SUDDUTH, Minneapolis, Minn.
W. D. MILLER, Berlin, Germany.
J. H. MUMMERY, London, England.
D. E. CAUSH, Brighton, England.
E. MAGITOT, Paris, France.
M. MORGENSTEN, Baden Baden, Germany
GEO. S. ALLAN, New York City, N. Y.

No. 23.

PRIZE ESSAYS.

Chairman—THEO. STANLEY, Kansas City, Mo.
*J. HALL MOORE, Richmond.
C. S. STOCKTON, Newark, N. J.

No. 24.

EDITORIAL.

Chairman—W. W. WALKER, New York City.
A. O. HUNT, Iowa City.
L. D. SHEPARD, Boston.
J. TAFT, Cincinnati.
J. S. MARSHALL, Chicago.

No. 25.

NOMINATING.

Chairman—W. W. WALKER, New York City.
A. W. HARLAN, Chicago, Ill.
JOHN S. MARSHALL, Chicago, Ill.

NOTE.—Until this time there has been very little of the proceedings of the General Executive Committee that was in shape for publication for the Dental Journals. All the work done by the Committee so far has been organizing the several Committees and planning their work. The work of organization has been very slow as it has taken considerable time to give notices to the various persons appointed on the several Committees and receive their replies, which in all cases have not been as prompt as they should have been. It was impossible to send out anything like a finished report of the Committee until these replies were received. As now published the Committees are ready for work. All the Committees are not appointed that will be needed. Other names will be added to the Committees already appointed, and from time to time circulars will be issued by the Editorial Committee and published in the Dental Journals giving the necessary information to the profession.

A. O. HUNT, Secretary.

DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

The idea of organizing a Dental College in Buffalo is not a new one. Nearly forty years ago the late Dr. George E. Hayes, when reconstructing the building belonging to him on the corner of Main and South Division streets, arranged a hall designed especially for the lecture room of a Dental College, and the University of Buffalo, with a view of bringing about such a desirable end, elected Dr. Hayes a member of its council. No decided steps were taken, however, for a number of years thereafter.

At a meeting of the Eighth District Dental Society, held in Buffalo, June 2, 1868, nearly twenty-four years ago, it was unanimously resolved:

That it is desirable that a Dental Collegiate Department of the University of Buffalo be established, and that we pledge it the support of this Society.

In accordance with that resolution a committee of six dentists was appointed, consisting of Drs. B. T. Whitney, Geo. E. Hayes, C. W. Harvey, R. G. Snow, W. C. Barrett and J. C. Gifford. That committee held a meeting on the 4th day of June, and adopted the following:

> *Resolved*, That the Committee report favorably the plan of renting, for a term of years, the suite offered for the purpose by Dr. Hayes, provided a sufficient sum of money can be raised to fit them up and furnish them in a suitable manner, and to establish the college on a firm basis.

A subscription paper was circulated, but not enough of money was secured to warrant the opening of the school, and again the scheme slumbered for years.

After the opening of the Medical Department of Niagara University in Buffalo, two or three plans were proposed, and a school was even announced in connection with that University, but it was finally adjudged impracticable.

When the University of Buffalo formulated plans for a new university building, the architect was instructed to include with the medical, the law, and pharmacal departments, suitable rooms for a dental college, and the dentists of Buffalo were invited to organize such a school. They were at the same time informed that if they did not choose to accept the task, the University would be compelled to call for assistance from abroad.

The work was undertaken by a committee appointed at a meeting of the dentists of the city, after a full discussion of the whole question, and that committee reports the practical accomplishment of its labors. A Dental Department has been organized, and teaching will be commenced with the fall term of 1892. The faculty will be made up of a regular lecturing staff of dental teachers, a clinical dental staff, and a staff of university teachers, who will deliver special lectures for the benefit of dental students.

The university building, now in course of construction at the corner of Main and High streets, will, with one exception, be the largest devoted to medical teaching in America. Situated upon the highest ground within the city limits, with its western wing especially constructed for a dental school, with its fine museum, its great library, and its three complete amphitheatres, it will afford to dental students house accommodations such as few colleges can offer. The Buffalo General Hospital is upon the same street, but a short distance away, and this will be open to the dental as to the medical students. The Sisters of Charity, the Fith, the Emergency, and other hospitals also offer unusual advantages. The college will be situated in a neighborhood that will afford abundance of clinical material for the infirmary, and altogether the prospects seem flattering. The school will take advanced ground in demanding a full graded course of three years, and will come up to all the requirements of the Dental College Faculties Association.

It proposes thoroughly to equip its students for practice, and that there may be sufficient evidence of this, their graduation will be practically placed in the hands of a body that will be entirely independent of the Faculty. Every student will be required to appear before a Board of Curators, consisting of representative men from different localities, and including every member of the Examining Board of The Dental Society of the State of New York. Before this Board of Curators every student shall be examined, and he must receive their approval before he can be graduated. Every department of the College will be open at all times to the inspection and examination of the individual members of the Board of Curators, and they will be expected to make themselves familiar with the work done in the College. The Faculty will thus be relieved from the responsibility of a final decision as to the qualifications of the student, and will not be liable to the charge of a desire to graduate matriculants for the fees that they have received. —*Advance sheets of Practitioner and Advertiser.*

THE
ODONTOGRAPHIC JOURNAL.

CONDUCTED BY J. EDW. LINE, D. D. S.,
39 STATE STREET, ROCHESTER, N. Y.
APRIL 15TH, 1892.

ILLINOIS STATE DENTAL SOCIETY.

The twenty-eighth annual meeting of the Illinois State Dental Society will be held at Springfield, Ill., May 10–13, 1891. The State Board of Dental Examiners will meet at the same time and place.

KANSAS SOCIETY.

The twenty-first annual meeting of the Kansas State Dental Association will be held at Ft. Scott, April 26th, 27th, 28th and 29th, 1892. Members of the profession are cordially invited to meet with them. Dr. E. E. Esterly, of Lawrence, is Secretary.

UNIVERSITY OF MARYLAND.

The annual commencement was held March 17th. Prof. Goras read mandamus, Provost Wallis conferred the degrees, Rev. Roberts addressed the graduates, and Dr. Nichols officiated oratorically in behalf of the class. The matriculates numbered 127; the graduates, 73.

THE ABBOTT PLUGGER.

If your Abbott plugger works hard, misses a blow now and then, calling daily for much oil, it should go to the hospital for crippled instruments. Ours behaved in this way, and we suggested to the manufacturers, through Mr. Levi Teal, of the

Philadelphia house, that a shallow spiral groove be cut in each end of the shaft in contact with the bearing. The suggestion was acted upon, and the result is a perfect working plugger that has been oiled but once since its return. The groove acts as an oil cup, and it not only carries the grease into Egypt but keeps it there.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The twenty-fourth annual meeting will be held in the Y. M. C. A. Building, Albany, Wednesday and Thursday, May 11th and 12th, convening promptly at 10 o'clock in the forenoon of the first day.

Essays will be read by Dr. Edwin T. Darby, Philadelphia, Pa., "Dental Erosion and the Gouty Diathesis, are they Usually Associated?" Dr. Eugene S. Talbot, Chicago, Ill., "Treatment of Irregularities of the Teeth;" Dr. C. F. W. Bodecker, New York City (subject to be announced); Dr. Albert Carter Westlake, Elizabeth, N. J., "Electricity; its Application in Dental Practice."

The Board of Censors will meet at "The Kenmore," Tuesday, May 10th, at 10 A. M., for the examination of candidates for the Degree of Master of Dental Surgery.

The official programme will be issued about May 1st.

ROCHESTER DENTAL SOCIETY.

The January meeting was held with Dr. Line, who discussed "Chronic alveolar abscess—its surgical treatment."

In February, Dr. H. S. Miller entertained the Society at his home, presenting in the course of the evening a paper on "Operative Dentistry," of which the following is an abstract:

I fully realize that it is quite the fad in these modern times of scientific research, to write elaborately on such subjects as phagocytes, micro-organisms, bacteria, electrolsis, etc., etc., but as most of us find it necessary to earn our daily bread by dint of hard, back-aching dental operations, and even as those of us familiar with the microscope are unable to discover by the use of the highest magnifying power, any large amount of lucre in our possession, I shall, in the spirit of this latter sentiment, simply say a few words on the old threadbare subject of dental operating, especially in its relation to the saving of teeth. Even this field is so unlimited, involving as it does so much of science, that I shall touch but a few points. We, in our professional capacity, are simply called upon as conservators of the dental organism, and also to put the oral cavity in the most healthful condition. I think we all readily admit that the filling of teeth is the operation that we are most frequently called upon to perform. There is no specific rule to apply to these operations, except that all cavities that require filling must be hermetically sealed with such material as is most durable, and best adapted to the case in hand.

When I hear of a dentist who uses no gold for this purpose, I conclude he is not conserving the best interests of his patient ; equally when I hear of one who uses no amalgam, I reach the same conclusion. Unfortunately we have no substitute for amalgam. Oxyphosphate of zinc is but a temporary expedient ; gutta percha the same ; likewise tin. Of the three last, I consider a proper kind of gutta percha, used with discretion as to where and how, much the better, possessing, as it does, greater preserving qualities. Of course, gold is our stand-by, and yet how many cases of beautiful operations in gold fail to accomplish what was honestly intended.

I shall not enter into a consideration of the chemical, electrical, or germ influences that are at work in the mouth, but consider only the defective mechanical operations. What causes the dark line we frequently see in a gold filling that we have inserted with, as we supposed, the utmost skill and care? Much of this trouble, I opine, arises from a too thorough working of the gold, paradoxical as this may seem. For example we have, say, a cavity in the grinding surface of a molar, with nearly parallel walls ; we insert our gold and begin condensing ; we press outwardly towards the walls, making it conform to their shape, then condense in the center, indeed, over the entire surface, and we continue this operation, with sometimes the following result : The first pieces placed and condensed against the walls assume the conformation of that part of the wall against which it was solidified ; as we proceed to condense in the center, if over much, we change the position of those first pieces, relatively to the wall, and being already made hard, they do not re-form to the new position, resulting in a minute space, undiscoverable to the eye, and yet eventually terminating in an unmistakable leak, detracting materially from the saving qualities of the work.

This defect is quite different from the one we sometimes experience in the rolling of gold, and would more nearly be expressed by what is known in mechanics as pening (of questionable derivation). This same trouble may arise to a certain extent also in the use of the plastic filling materials. Every pressure of the instrument changes the relative position of the molecules of the mass, so my conclusions are that some of our failures may arise from over-manipulation.

Another trouble that may arise from too much pressure in condensing, may lay in the fact that we have driven our metal into the cavity to a point but little short of splitting the tooth, which, when put to use in masticating, may be sufficient to complete its destruction.

A little matter to which I desire to allude is the care necessary in the filling of the approximal cavities, in the aulinir teeth especially I have seen cases where a cavity having formed in one tooth, and on being filled, the enamel on the adjoining tooth was so abraded as to very soon require filling. Too much care cannot be given to this. I have thought that perhaps our pluggers made for this work might have a thin coating of rubber, or some elastic substance operating as a cushion, securing immunity from trouble in this direction.

I have been experimenting in the use of nitrate of silver somewhat, either is crystals or saturated solution, with what results remains to be seen, but I have much faith in it.

The March meeting was held at Dr. J. Requa's office, that gentleman presenting the following notes on "Early Practice":

When I commenced the practice of dentistry 39 years ago, all gold for filling teeth was *plain*, or such as we now call *non-cohesive*, or *soft*. All cavities had to be self-retaining, and the usual way of preparing the foil was to fold the sheet twice, thus making it one inch in width. It was then cut into ribbons of an eighth to a one-sixteenth inch, and these, with smooth end pluggers, stuffed into the cavity until a little more than full, when it was burnished down. Abbey's foil was much used, and, I think, nine-tenths of it was No. 6.

There was no building up or contouring in those days. If a central, lateral or bicuspid was a little too much broken away to appear well, out it came, root and all, and a plate put in. Oh! you young dental proficients little know of the concern we old dentists have about the remission of sins.

About 1854, I heard of and obtained a box of Watts' crystal gold, and with it directions to serrate the plugger points. There were also directions to heat this crystal gold in an alcohol flame, to make it more adhesive. Then commenced the building up of gold —otherwise contour filling.

The anchoring was effected in two ways: One was by filling partly with soft foil and adding the crystal gold (or, as it was often called, sponge gold); the other way, and one that led to many failures, was to start with sponge gold held in place with an instrument in the left hand until it had become self-retaining.

About this time hundreds of us made the discovery that heating gold foil made it adhesive, and we soon had adhesive foil in the market. We now commenced drilling retaining pits, filling them with adhesive foil and building upon them as anchorages.

Next came oxychloride and soon after oxyphosphate of zinc. Oxychloride was a failure, except in two very important particulars which are foreign to my subject. Oxyphosphate was put further on.

The grand climateria in dentistry was just before the invention of the rubber dam. Cohesive gold was a premature birth in our family. It came before we were well equipped for its use; but the rubber dam took us past that dangerous period of dampness.

I will now tell a true story: About 1869, the 8th district society met with the 7th at our semi-annual meeting. On the morning of the second day there was a clinic at Dr. Blank's office. Dr. Blank (of Rochester) himself had attempted to fill a lower bicuspid for a patient with an awfully wet mouth (who would have nothing but gold), at two or three previous sittings without success. He arranged to have this patient at the clinic in question, and called for a volunteer to fill the tooth. Dr. Blanketyblank, of Buffalo, held up both hands, and went at it with full confidence in his pipe-clay compressors for the ducts of Steno, and his solid silver horse shoe compressor on the sublingual ducts. He got the cavity about one-half filled, when his tell-tale piece of spunk grew black and his gold wouldn't stick any more, and he gave it up. You all know how easily these gentlemen would fill such a tooth now.

Early in the use of oxyphosphate deep crown cavities in molars were filled half or two-thirds with it, and when it had hardened, gold was added in a simple shallow cavity, which is good practice even to-day. But, so far as I know, it is only of late that it has been used as a cementing medium between gold and the tooth.

At a meeting of the 7th district two years ago, Dr. Hofheinz gave us a paper on combinations of gold and tin, and among other things, spoke of cementing gold into labial cavities of incisors with oxyphosphate. Dr. Hert read a paper a year ago, at our city meeting, on some new combinations, and Dr. Line, in December, at

New York, gave us another list of possibilities, all going to show that, in the absence of that new filling that we all so long for, we are making the best of what we have.

PELLETS.

The Dental mass meeting held in New York, March 29th, proved a great success. Forth-coming periodicals will contain full particulars.

Dr. J. Allen Osmun, Newark, N. J., will give the results of his "Observations on the use of copper amalgam," before the N. Y. Odontological Society, April 19th.

Now, Mamie, tell me how many bones you have in your body ?

Two hundred and eight.

Wrong ; you have only 207.

Yes, but I swallowed a fishbone at breakfast this morning.—*Harper's Bazar.*

The doctor had filled several teeth for the old farmer, whereupon the latter, taking out his pocket book, asked :—

"How much, Doctor ?"

"Let me think—call it 12 dollars."

"Say, guess again."

Well, Johnnie, back again, I see. Why were you not at school last week ?

Folks wuz sick.

Contageous disease ?

Don't know. Is babies contageous ?

Mr. Geo. Morton, of Little Britain, London, E. C., calls special attention to a new form of stoppered bottle, which he calls the

"Squat." It roots itself as firmly to a table as the average dental student glues himself to the most comfortable of office chairs. "Squat" is good, and no well equipped office should be without at least one.

. Commencement exercises of the dental department of the Cincinnati College of Medicine and Surgery were held March 16th, 1892. Remarks were made by the dean, Professor Junkerman, the degrees conferred by Prof. Harper, and the valedictory delivered by Prof. Buxbaum. There were ten graduates. The matriculates for the season numbered thirty-four.

Those who ought to know say that the "Something new in mechanical dentistry" is nothing more nor less than the old fire-gilding method used by Dr. F. Y. Clarke, then of Saratoga, forty years ago. Be sure in this as in all other similarly advertised schemes that you get something for your money. It is usually time enough to pay for goods when you get them.

Young man, stand up ! When a member of the faculty, a fellow student, or a friend at home, advances the balance in cash necessary to the completion of your course in college, do not forget to reimburse him, principal and interest, thanks and all, the very day you succeed in getting together the full number of dollars. You will feel better over it, as also your benefactor—and richer, both of you.

At the annual meeting of the Chicago Dental Society, held April 5th, 1892, the following officers were elected for the ensuing year : J. W. Wassael, president ; Thos. L. Gilmer, first vice president ; E. A. Royce, second vice president ; L. L. Davis, recording secretary ; Geo. J. Dennis, corresponding secretary ; E. D. Swain, treasurer ; J. H. Smyzer, librarian ; G. H. Cushing, E. Noyes, J. G. Reid, board of directors ; A. H. Peck, B. D. Wikoff, D. M. Gallie, board of censors.

To hear some men talk one would think dentistry the most wearing of all occupations, and one to be shunned by those who still have time and opportunity to get a start in something else. How would sawing wood suit some of them, even at the same pay? Work a little, gentlemen, if only for a change, entering up your complaint when the work is done. You'll feel much the better for it.

Doctor, I have a tooth that needs filling. How soon can you attend to it?

March 24th, at nine o'clock.

Why, that's a whole month. I'm afraid the tooth will not last that long.

Oh, yes! A month will make little or no difference.

Would it do to let it stand a year, Doctor?

Probably not. In that time you might lose it.

But if you defer filling it for a month it will be one-twelfth gone, will it not.

Oh, no. You see, Madam, decay is not as you seem to think, in arithmetical, but rather in geometrical progression.

Oh, the awful streptococcus
  Is emerging from his lair—
And the wild staphylococcus
  He is climbing up the stair!
All the rest of his nomenclature
  I hear it coming too—
Pyogenes florescens—
  Heavenly powers! What *shall* I do?

O Gonococcus!—Leptothrix!—
  Tetragenes! Forbear!
Your ptomaines I can do without,
  Your toxalbumins spare;
Don't bring your filthy luggage
  In my "inwards" to abide!
And if you *will* come in the keyhole,
  Please to leave your names outside!

—*Waltman.*

BOOKS, PAMPHLETS, PERIODICALS.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY, by B. H. Catching, D. D. S. Atlanta: Constitution Publishing Company. Pp. 241.

Here we have another volume of Dr. Catching's invaluable compilation of practical things of every day value to the busy dentist. It is an improvement on its predecessor in that methods of condensation have been more vigorously applied, and with the result that superfluous words have been weeded out, and ideas, otherwise unintelligable, made so clear that many of them must appear even to the original writer as something new. Everything of practical value published in 1891 finds a place in the book, with all of the illustrations of the original article. Operative dentistry, prosthetic dentistry, crown, bridge and inlay work, orthodontia, dental medicine and surgery, besides numerous miscellaneous subjects find frequent and generous mention throughout its pages. It was a big undertaking for one man, but Dr. Catching seems to have compassed it perfectly. The volume may be had direct or through the dental dealers. The price is two dollars and fifty cents.

CHART OF TYPICAL FORMS OF CONSTITUTIONAL IRREGULARITIES OF THE TEETH, by Eugene S. Talbot, M. D., D. D. S. Philadelphia: Wilmington Dental Manufacturing Company.

The sixteen colored plates comprising this chart illustrate the typical forms of irregularities of the jaws and teeth. They are from models of actual cases in the author's practice, and beautifully depict the features said to characterize the dental outfit of the idiotic, deaf and dumb, blind, insane and criminal classes. The cost of the volume is two dollars and fifty cents.

NOTE.—Attention is called, unnecessarily, perhaps, to the fact that the matter of this form is somewhat mixed.

* * *

ANNOUNCEMENT.

WE have just fitted up our new rooms, which takes in 115, 117, 119, 121 and 123 State street, about 5,000 square feet of flooring. With this enlargement we will have room to show our goods to much better advantage, and will hereafter keep all the leading manufactured goods of all varieties, which are not found in any *one* house of these same manufacturers. We keep a full and complete stock of Gum and Plain Teeth manufactured by H. D. Justi & Sons, The S. S. White D. M. Co., The Wilmington D. M. Co., and Gideon Sibley; also all makes of cheap teeth (in full sets only). Our Dental Rubber will include all Brands of Eugene Doherty, Akron Rubber Co., McCormick, Bow. Spring, Whalebone, and English, German and American Pink Rubbers. We shall keep all the leading makes of Amalgams and Alloys, and all the Cements and Gutta-Percha Fillings, too numerous to mention here. Our stock of Instruments and Burrs will include those manufactured by the S. S. White D. M. Co., H. D. Justi & Sons, The Wilmington D. M. Co., The Boston D M. Co., and Hood & Reynolds.

We also keep a full stock of all the different styles of Dental Chairs and Dental Cabinets, Wall and Chair Brackets and Attachments, so that we can fill orders dicect from our stock and not cause delay to our customers And while we are largely interested in manufacturing Vulcanizers, Lathes and Gas Apparatuses. We shall at the same time keep a full line of all other makes, as well as all Laboratory goods. We also carry a large stock of Second Hand Chairs, Case and other Goods. Come and see us.

GEO. P. DAVIS,
ROCHESTER, N. Y.

THE
Odontographic Journal.

VOLUME XIII.—*July, 1892.*—*No. 2*,

CAUSES OF PAIN REFERRED TO THE TEETH.

It is not of infrequent occurrence for a patient to come complaining of toothache; in the majority of cases, from one's records, or from unmistakable symptoms, it is made evident, in a very short time, just where the trouble is. Occasionally, however, the diagnosis becomes extremely difficult, and one has to consider all the causes of pain, and reach his diagnosis through elimination.

SURFACE SENSITIVENESS.

One writer says, "In very rare instances an apparently sound and healthy tooth will become the seat of severe and continuous pain, which, for the time, resists amelioration from the application of any of the remedies usually employed. Generally, however, such a tooth, if the intensity of the pain does not necessitate its removal, will be found within a limited period to be responsive to local irritants, such as sweet, sour, hot, or cold articles, when brought into contact with some circumscribed part upon the crown, the response manifesting itself as acute but temporary pain. The cause of this morbid condition is but imperfectly understood, and its pathological significance is only fully appreciated when the sensitive surface yields to some destructive agent, resulting in molecular disintegration or caries." Such a spot upon the crown of a tooth must, as this author says, be very rare; but it is by no means uncommon for spots upon the roots of teeth, when there has been more or less recession of the gums, to become thus sensitive, and responsive to a painful degree to the sort of irritation just mentioned. Especially is this liable to occur when the relation of adjoining teeth is such that food is allowed to crowd up between the teeth, where, by its macerating effect and by the action of the acids formed in its fermentation, it brings about this hypersensitiveness of the surface. That this is the cause is proven by the fact that the sensitiveness disappears when, owing to the presence of approximal cavities, it is possible so to contour the teeth that food shall not be wedged up between them. Pain due to this cause is pretty definitely located by the patient, and responds to the point of the examining instrument. That there is no depression or roughness of the surface shows that the condition is not the one next to be mentioned.

CARIES.

Caries, though superficial, may be accompanied by pain wholly out of proportion to the loss of tooth-substance. If caries is the cause of pain, in a given case, it is made evident by the unusual sensitiveness of the spot to the blade of the excavator, as well as by the history of pain in that region after eating sweets and acids.

That the pain from this cause may be distressing and continuous, I can myself bear witness. While eating sweets, I began to feel a pain in an upper wisdom-tooth, which had never given me any trouble. The pain, soon becoming excruciating, lasted an hour. There was no question in my mind but that the pulp was exposed. Examination, however, showed that the caries—was very superficial indeed.

HYPERÆMIA AND INFLAMATION OF THE PULP.

When one considers how narrow is the line between hyperæmia and inflammation (in the one case a congestion of the capillaries of the pulp ; in the other, the same condition with the migration of the corpuscle and the exudation of lymph added), it is found that the diagnosis between the two conditions (hyperæmia and inflammation) is difficult or impossible. That it is necessary to distinguish between the two conditions is owing to the fact that, if the case be one of simple hyperæmia, there may be a good chance of saving the pulp by improving the conditions of the tooth.

Hyperæmia may occur in a tooth apparently sound; more frequently it is found in one in which there is a cavity of considerable depth, or a filling of large size, thus subjecting the pulp to changes of heat and cold. The pain of these two conditions is, pretty generally, definitely located by the patient.

In hyperæmia, the pain is paroxysmal, of a lancinating, excruciating character, and is usually induced by thermal changes. In the intervals between the paroxysms there may be complete cessation of pain.

The same symptoms hold for inflammation of the pulp, except that the pain is not as severe, as a rule, and is more continuous. The pulp does not respond quite as readily to heat and cold.

A convenient and effective way of testing a tooth, to see whether it is responsive to thermal changes, may be mentioned here. A piece of ice, to give a satisfactory result, needs to be small enough to cover but one tooth. When thus small, it is hard to handle, melting before the cold has had time to penetrate the walls of the thicker teeth. On the other hand, heat from an ordinary instrument, as, for example, the ball burnisher, is dissipated too quickly to afford a conclusive test. When an Evans root-dryer is kept in the bunsen flame till the bulb is red-hot, enough heat is liberated at the tip of the silver point to scorch the fingers as it is quickly drawn over them. Moreover, the heat is kept up to this high point for some little time. If there is any pulp alive in a tooth in question, the tip is pretty sure to find it out. This can be applied, too, at the thinnest part—the neck—without danger of burning the gum.

PERICEMENTITIS.

The prominent symptoms of all inflammation of the pericementum is tenderness on percussion and on movement of the tooth. Pain varies according as the cause of the trouble takes its origin from the margin of the gum, or from the apex of the root.

A wedge pressing upon the gum, or the presence of fermenting food in a space between two teeth not easily reached, or a deposit of tartar, may set up a pericementitis. There is some lameness of the teeth involved. The pain, in most instances, amounts to nothing more than a "grumbling." When the trouble is at the apex of the root, however, from extension or inflammation of the pulp, or from the ingress of septic material through the empty canal, the pain, at first dull, soon becomes severe, throbbing, and unendurable. There is great tenderness on percussion, together with a lifting of the tooth in its socket. Heat does not aggravate, unless after long application, and then to a moderate degree. Cold, on the other hand, brings relief.

An interesting point to be mentioned here is, that in teeth with more than one root, a pericementitis may be set up on one root at its apex, while another root is still alive. Forgetting this, it would be very confusing to drill into a tooth which gave all the signs of pericementitis, and find the tooth sensitive.

NODULAR DENTINE OR PULP-STONES.

This condition is by no means uncommon. The diagnosis, as there are no distinctive symptoms, is not easy, and must be reached by exclusion. The pain is neuralgic in character, and, at first, is not apt to be attributed to the teeth. If attention is called to them, there will probably be found a slight tenderness on percussion in the tooth which is the seat of the trouble. The nenralgic pains are paroxysmal, there being pretty complete relief from pain during the intervals.

HYPERCEMENTOSIS.

What has been said concerning nodular dentine applies almost word for word to hypercementosis. Pain, if associated with the teeth, is neuralgic in character. The affection is much more rare, however, than nodular dentine, or, at all events, its presence is discovered less frequently by the practitioner.

UNERUPTED OR IMPACTED TEETH.

Such teeth may be the cause of mysterious toothache. In rare cases, inflammation of the pulp and pericementum may be set up in unerupted teeth. Impacted inflamed wisdom teeth, from their position, pressed down upon the nerve-trunk, are very liable to give rise to severe toothache, with neuralgia, trismus, and anchylosis.

INFLAMMATION OF THE ANTRUM.

Inflammation of the mucous membrane of the antrum when connected with the teeth, as regards the etiology, or as far as the symptoms are concerned, is due, in most instances, to an extension of an inflammation of the pericementum of some of the teeth which not infrequently extends into that cavity. Occasionally, however, as Garretson mentions in his "System of Oral Surgery," a purulent inflammation of the membrane which, in its origin, is independent of the teeth may be characterized by neuralgic pains, with a localization in the bicuspid or molar teeth.

A case of antral abscess I have in mind was as follows: The patient complained of agonizing pain in the left upper second bicuspid, in which there was a small distal cavity filled with gutta-percha. The filling was removed. Being found in good condition, the cavity was refilled. It was concluded that the case was one of simple hyperæmia, and, after the application of iodine to the gum, the patient was dismissed, with the hope that the pain would become quiet.

The pain continuing, relief being demanded, the pulp was devitalized, removed, and an antiseptic dressing left in the root. No relief coming from this procedure, a drill was put into the antrum, giving vent to the pus confined there.

At the outset there are no diagnostic points of this affection, unless earache and ringing in the ears (which are pretty constant symptoms) be mentioned. Later, when pus has formed, there is a feeling as of the running of water when the head is moved from side to side, together with the escape of pus into the nostril of the affected side.

REFLEX TOOTHACHE.

In a case of toothache for which it is difficult to find a cause, the possibility of its being a reflex expression of trouble in some other part of the body, or in some other tooth, must not be forgotten.

As an illustration of the very common reflex toothache of the superior second bicuspid when the inferior wisdom-tooth is at fault, and as an example of the fact that one should never rely upon "subjective" symptoms, nor be deceived by appearances in making a diagnosis, the following case is given:

A patient came to me, saying that her teeth had recently been examined by her dentist, who had pronounced their condition good. She had been suffering from pain in the right superior second bicuspid, the pulp of which she thought had been capped. As the filling—a soft gutta-percha—was leaky, it was removed. The cavity was very deep, and in most cases, there would have been an exposure of the pulp, but there had evidently been a recession of the pulp, with the deposit of secondary dentine. As the floor of the cavity was hard, and the smallest probe could find no opening into the pulp-chamber, it was determined to fill again, putting an antiseptic dressing at the bottom, gutta-percha and cement on that. All went well for a month, when the patient returned, saying that the pain was worse than before. An exposure of the pulp was made. The pulp was paralyzed with cocaine, removed, and the roots filled with gutta-percha. The patient was dismissed with the assurance that her pain was at an end. She returned in a few days, saying that she had been in agony. Here was a disappointment for me, a believer in root filling, for in this case all the conditions had been favorable. Percussion, however, showed that the bicuspid was ababsolutely without tenderness.

Examination of the lower wisdom-tooth revealed a cavity. This was excavated and dressed, and there was an end of the pain.

Pain may be reflected from more distant starting-points. Slight operations in the nasal passages, such as the removal of adenoid growths and the cauterization of hypertrophied mucous membrane, covering the turbinated bones, may be followed by toothache. Diseases of the eye and ear, of the stomach, of the uterus, and the condition of pregnancy may be accompanied by pain in the teeth.

A case which may be mentioned here as illustrating how the sensation of pain may be reflected from its proper source was seen by me a few days ago.

The patient, a woman, began to be troubled five years ago by neuralgia in different parts of the distribution of the trifacial. The teeth, however, had never been the seat of pain. During all that time she had been under treatment, free from pain, except under the influence of analgesics. The pain having become localized in her ear, she was sent to an aurist. He, finding no trouble, sent her to a neurologist, who, after a careful examination, told her that the only thing to do before availing herself of the last resort (excision of a portion of the nerve) was to consult a dentist. He brought her to Dr. Hamilton, who finding an exposure of the pulp in a lower third molar, ordered the tooth extracted. In his absence I saw the patient, when, two days later, she came to report. For the first time in five years, she said, she had been entirely free from pain. She left, filled not with a spirit of thankfulness that her sufferings were over, but with a desire for vengeance upon the men who had kept her under treatment so long, when the trouble was all due to a wisdom tooth.

In cerebral diseases and hysteria, a patient may complain of toothache when the teeth are in no way at fault.—Briggs (C. P.), *International Dental Journal.*

FAILURES IN EXAMINATIONS.

It is matter of no slight interest to us alike, as members of the profession and as relations of those who are "up for" examinations, to ascertain the why and the wherefore for so many failures. The usual reasons assigned by the students themselves are curious, but are hardly capable of sustaining a rigid investigation. It is said "So and So" is severe, or else somebody else is sarcastic, the hypothetical examiner may even be said, vampire like, to suck out the students' knowledge (save the mark !) merely to cast away his nerveless frame "referred" for six months. Another excuse is that the candidate "cheeked" the examiner, and this is alleged in a manner, contrived to convey the hint that the candidate knew more about the whole subject than the examiner, a theory which possesses more ingenuity than probability. As a matter of fact, none of these causes have probably ever been the means of getting any candidate referred. Examiners are as a rule, as human as the rest of the world, and much prefer getting answers to simple questions, than being put to the infinite pains of cudgelling out facts from the brains of an unwilling, if capable, student. The "showing off" stage dies a very early death in an average examiner's career, the poor man is so heartily sick of the whole business, that even self-glorification is lost sight of in mental weariness. When we are told that a student has failed in his examination, we may be perfectly sure that the fault lies with the candidate, and not the examiner. Nervousness may play its part, but even this seldom lands a youth in failure, the usual causes of want of success are to be sought in bad preparation. A lad may be crammed with facts concerning every item of dental lore, from the latest views on the dentition of the hake, to those touching the treatment of sensitive dentine and yet fail badly. Why is this ? Simply, because a mere accumulation of disconnected facts cannot be marshalled into form, for due answering to any given question. The student who knows very little, but knows that little well, stands a far better chance than the encyclopædic youth, who like the Strassburg geese, is stuffed to bursting point with facts and theories, none of which had he made his own. The average run of students are divisible into two categories—the stupid ones and the careless ones on the one side and the well educated and bright ones on the other. These last, if they choose to apply, can pass any examination easily, but the others are now-a-days in a parlous state. The stupid men goaded by the sense of their own shortcomings, think they can compel Nature by violence, to grant them a power which she has denied them. They work day and night, disregard the simplest laws of health and common sense, read far into the night, at meals, and neglect outdoor exercise. They ever think they will prevail by their much reading. Of course they must fail, and it is a merciful dispensation that fail they should, for common sense and judgment are of far more importance in the conduct of life, than an extra diploma or two. If such students were at the commencement of their career taught *how* to learn ; to digest their mental food as carefully as they would their tough mutton, and resistant beef, if they were taught to curtail the reading to a few hours, and to acquire that rare but all necessary knack of complete concentration to the matter in hand, they would without toil or distress, pass all ordinary examinations with credit, and, what is more, would know the outlines of their work. We have known students to sit down in cold blood to read forty or sixty pages of some poor man who had written on Dental Surgery or Medicine, and triumphantly tear the dripping towel from their heads when the last page was thumbed, and these silly people really believed they were working! How many men bearing F. R. S. after their names could master forty pages of a new subject at one sitting, and these men have learnt to learn all their lives? Forty pages of a text book is equivalent to about half-a-ton of super-concentrated extract of meat, and this would prove a tough meal even for a tiger. The careless man differs from the conscientious but stupid man, in that he lacks all system. He may read hard one week, but then devotes himself to cricket or what not for the next week. He takes no notes and muddles up what he reads, because he won't take the trouble to test his own knowledge of what he has read. Our students are as a rule overtaught. They are helped so much over the stiles, and shown so many short cuts to knowledge (or passing their examinations, two things not absolutely synonymous), that they will not exert themselves to acquire knowledge. They go to their "grinds" and hope, delusive aspiration! That some of what they hear may stick and supplement this tutorial lactation by the furious cramming of one of those little boiled down manuals which are intended to help students to get up their facts at the last moment; waistcoat pocket volumes, which, but for the advertisement such a proceeding would give, should be publicly burned by the hands of the hangman. Less work, better work; less muddling and more concentration would send up the average of our schools at once. Be it remembered it is the average men—the majority—who set the range of the examination in all pass examinations, the examiners are merely there to see who attain the possible average, and as a rule they do their duty honestly.—EDITORIAL, *Dental Record.*

THE TUBERCULOUS DENTIST AS A FOCUS OF INFECTION.

Upon reviewing the various literature on this question, especially those portions of it which refer to the dangers of infection between the dentist and his patient, the speaker was much surprised to find no advice offered to the dental profession by competent bacteriologists, as to the considerable (and oftimes great) danger present to the patient, by pathological conditions the dentist himself may be suffering from at the time of operating, and to point out the necessity of establishing, by legislative measures if required, laws or statutes which would prevent the occurrence of such dangers.

I refer, more particularly, to the jeopardy in which human life is placed when people are subjected to treatment by a practicing tubercular dentist. This may seem, to many of you, as a bit of superfluous advice, and you may retort that such a circumstance is beyond the bounds of possibility, but I assure you I have seen a tubercular member of your profession practicing daily on unsuspecting or ignorant patients.

My experience with dentists has been very limited, and therefore I am not in a position to make any assertion as to the frequency of such pernicious and dangerous proceedings; but the very fact that my slight personal observations resulted in the detection of one such case, naturally suggests a possible more common occurrence of tuberculosis in practicing dentists than might be supposed. Since commencing the work incident to the preparation of this paper, one of the local members of your profession has detailed another case, which was under his own personal observation, of a tubercular practicing dentist.

The greatest danger, under such circumstances, is not, as some of you might imagine, in the infection of the patient by the transmission of germs through the medium of the breath of the operator, but in the reception of tubercular material which becomes dry on the handkerchief, clothing, linen, or instruments of the dentist. The prevention of such dessication is so extremely difficult and impracticable, as to be discarded without serious consideration if such prevention be presented as a possible prophylactic measure, to enable the victim of this malady to continue his professional work until physically unable to do so on account of the inroads of the disease. It is not generally known that bacteria do not float in the atmosphere in the moist state, but only do so after desiccation, and then probably to no great extent, unless aided by more or less strong currents of air.

Tuberculosis is now almost universally considered to be an infectious disease, and of so contagious a nature that I candidly believe we shall, many of us, see the day when attention to preventive measures against possible infection from cases of this disease, is as regularly insisted upon as are the sanitary requirements in cases of smallpox, yellow fever, and typhus fever (with the exception of somewhat less vigorous quarantining) at the present day. The period in which to accomplish this much-desired treatment of tubercular cases, will depend upon the rapidity with which the laity, and professional men even, become educated to the full comprehension of the single and sole cause of the affection,—the tubercle bacillus,—

and the proper realization of the benefits to be derived from the adoption of such measures. And to the intelligent efforts and advice of the members of the medical profession, as well as to the great aid which you, members of the dental profession, can give, by embracing each and every opportunity to inform your patients, especially influential citizens, as to the true character of tuberculosis, must the accomplishment of this end very largely devolve.

Of all the various ways by which tubercle bacilli find entrance into the human body (such as from the surface of the skin through wounds, by contusions, cuts, or otherwise; from the ingestion of milk and flesh from tubercular cows and animals, etc.), infection by inspiration,—by the entrance of the dried germs through the mouth, and so on to the lungs,—far surpasses in frequency, all other methods of transmission. And this can only be accomplished when the medium on which the micro-organisms have been discharged from the body, dries, or disintegrates, into powder or dust. For this reason the most dangerous source of infection is from handkerchiefs or cloths on which the sputum has been received (unfortunately a too common procedure), and on which it becomes dry in an exceedingly short time. Consequently by merely preventing the sputum of consumptives from drying, the most important kind of infection may be rendered harmless.

The first contradiction I have seen, by competent pathologists (who acknowledge the tubercle bacillus as the essential cause of tuberculosis) to the statement that the commonest source of infection is the inhalation of dried bacilli from handkerchiefs, linen, clothing, dust from the floors and ceilings of rooms previously occupied by tubercular subjects, etc, was recently made by Dr. J. West Roosevelt, of New York.

Dr. Roosevelt maintained that "there was much more likelihood of getting an overdose of the virulent germs" of tubculosis "through the ailmentary track, either by the ingestion of meat, milk, or, in children, by putting articles of every nature into their mouths, no matter where they may have lain," than by the manner which I have just described. While recognizing the value of the opinion of so able an authority as Dr. Roosevelt, I am convinced that his statement will not be corroborated by the majority of pathologists and bacteriologists in this country or on the continent. True it is, that much needless alarm may be created in the minds of the public, by the advocacy of too severe and unnecessary measures of prevention, such as quarantining, etc., by prejudiced and over-zealous investigators, the effect of which would be the unjustifiable persecution of many poor victims of tuberculosis, and as I just suggested, the only proper course to pursue in dealing with this question, is to persistently and intelligently educate the minds of the public, as to the exact status of this matter.

Few pathologists at the present day, believe in the theory of heredity as a cause of tuberculosis. It is a fact that the offspring of afflicted parents often regularly develop, sooner or later, the disease, but the explanation is to be sought in a general impoverished condition of the organism, as indicated by enfeebled assimilative and nutrient powers, which are quite sure to follow as the inheritance from unhealthy progenitors.—LINSLEY, (J. H.), *Bacteriological World.*

BRIEF SITTINGS AND EASY OPERATIONS FOR CHILDREN.

Children especially should not be compelled to submit to the fatigue and nervous strain of such long and painful operations, particularly during the period of rapid growth, puberty, and just preceding it, or while engaged in severe study. At these periods the nervous system is usually taxed to its utmost limit of endurance. When crowded beyond this point the health gives way; and often when too late it is discovered that the foundation has been laid for a train of nervous affections which persist until the end of life.

The practice of filling teeth with gold for children at these periods is, for other reasons than those just now under discussion, not wise, and doubly so when the present and future health of the child is placed in the balance.

The rapid movement of the teeth, by the various methods employed in orthodontia, is often a serious and dangerous operation, on account of the severe and constant irritating influences upon the nerve-centres.

It requires a well-formed mind and the exercise of a clear judgment in order to determine, many times, just what, how, and when this or that operation may be undertaken with safety to the health of the child. It would be much better to sacrifice the personal appearance to the general health; while, on the other hand, a year or two of schooling might be dispensed with for the sake of the personal appearance. In other words, it would be wisdom to choose health rather than beauty; while a year or two of rest for the child from school-work, to gain the necessary strength to endure the nervous irritation incident to so many cases in regulating the teeth, would be a small sacrifice to make to improve the personal appearance or to place the teeth in a better position to perform the functions for which they were created.—MARSHALL, (I. S.)

THE LIVER AS A DESTROYER OF TOXINES.

In diseases of the liver or any infectious maladies of whatever origin, it is of the first importance to maintain in its integrity the ability of the liver to destroy the toxines · we ought even to seek to increase its activity in this respect. To accomplish this, two classes of means may be employed :—

1. To increase the glycogenic function of the liver, since, according to the result of physiological experiment, there is an intimate correlation between its glycogenic and its antiseptic function.

2. To restrict, as much as possible, the sources of poisoning of the organism so as to reduce to a minimum the quantity of toxines which the liver must destroy.

Let us examine each of these points; first, as regards the augmentation or the increase of the glycogenic functions of the liver; and I shall dwell upon this point in another lesson,—that the glycogenic function of the liver is diminished by abstinence from food and elevation of bodily temperature. With regard to abstinence, it is necessary that a patient suffering from febrile disturbance and disturbances of the liver should receive as nourishing food as possible. It is well to be highly nutritious, but it must fulfill certain conditions of which I will speak in connection with the second point under consideration, namely, the suppression of the cause of poisoning of the system. We shall see, in fact, in relation to this point, that food is one of the most active sources of this poisoning.

To the necessity of properly nourishing the febrile patient is joined another necessity, that of lowering his temperature. In looking at the matter exclusively from the point of view of the antiseptic function of the liver, it is necessary to combat abnormally high temperature. We may accomplish this double object, either by bath, cold or warm,—preferably warm baths in my judgment,—or by the employment of a group of medicinal agents belonging to the aromatic series. But these drugs present the disadvantage of diminishing the urinary secretions and thereby diminishing the excretion of the toxines.

In his experiments, Roger seems to have demonstrated that glucose, of itself, modifies the toxicity of vegetable or organic alkaloids.

We may from this fact, draw the conclusion that sugar, and glucose in particular, might be advantageously utilized in infectious diseases, and that it might be necessary to add sugar to the drinks of patients suffering from these affections. But this is a point which requires further investigation.

Still more important is the great question which I now approach, that of restricting, as much as possible, the sources of infection of the system. One may say that in all affections of the liver, no matter of what sort, this precept applies.

In the preceding lesson, I have shown that the animal toxines have four origins: They are found in the foods introduced into the digestive tube; they result from the fermentations which occur at different periods of the digestive act; they are secreted by microbes which abound in the intestinal tube; finally, they result from the activities of the cell life of the body.

To these four origins, it is necessary to add a fifth, a pathological or therapeutic origin,—toxines manufactured by the microbic cause of infection, in that group of diseases to which I have given the name of toxi-infections.

We sometimes administer poisonous alkaloids with a curative object.

In the treatment of all patients suffering from affections of the liver, it is necessary to use great caution in the administration of alkaloids by the mouth, and particularly as regards certain alkaloids, such as morphia, quinine, and atropia. Only the hypodermic method should be employed, since it has been demonstrated that the special destructive action of the liver upon vegetable alkaloids is lessened or absent when the liver is diseased, so that poisoning by therepeutic doses of the alkaloids is likely to occur when these drugs are administered by the mouth.—BEAUMETZ, (D.), *Bacteriological World.*

PROSECUTIONS.

Many licentiates have an idea that the members of the Board of Examiners should fulfil the duty of spies and detectives. If there is a quack in any obscure corner of any county they expect some officer of the Board to be omniscent as well as omnipresent, while they are particularly anxious to be *incognita* themselves. Nevertheless, though it is no more the duty of members of the Board than of others to secure information of illegal practice, it has been a duty voluntarily assumed, and most of the prosecutions have been brought about by the action of such officials. In Quebec Province, especially, has this been the case, for the simple reason that if they had not been instigated by members of the Board they would have been altogether ignored. Last month two more cases were brought before the police court; one offender was fined $100 and costs, another $25 and costs. One of the most sublime exhibitions of cheek is attempted by the latter offender, who has been twice fined. Though he has been drawing a regular salary as an employee in a commercial firm, pretending to be indentured to a licentiate at the same time, and not having passed more than a few months in the office, he has applied to the local legislature for a private bill to permit him to practice without license, fee or examination. Quack premiers and boodling politicians reflect their principles upon every class of society, but there is hope at last for Quebec, as Mercier is degraded and honest men have hold of the helm.—EDITORIAL, *Dominion Dental Journal.*

SENILE ATROPHY OF THE UPPER JAW.—(ABSTRACT).

With advanced age the human organism is reduced in size and weight,—the more so after the threescore years and ten have passed. The whole body shrinks, as well as the tissues. Age itself is a disease. The old Roman proverb says that the aged return to childhood, mentally and physically.

The question we have tried to solve is,—In what does this atrophy consist? Through the kindness of Dr. Paine, superintendent of the Insane Hospital in Westborough, Massachusetts, we came into possession of the upper jaw of a woman who died at the age of seventy-five years. It was placed in a half-per-cent. solution of chromic acid, in which it remained several weeks, for the purpose of softening the bony parts. The whole thickness of this jaw was not more than from four to five millimetres. It was perfectly smooth.

Let us consider the senile changes of the tissues involved in the formation of the upper jaw.

First, epithelium.—As mentioned before, the layer of stratified epithelium has been considerably reduced in bulk, although its constituent portions are still recognizable.

Second, fibrous connective tissue.—The senile changes are explained only by the fact that protoplasmic bodies lie between the fibrous connective tissue, which are traversed by a net-work of living matter. These bundles are possessed of life, therefore, as well as protoplasm itself.

Third, blood-vessels.—The fibrous connective tissues are freely supplied witn blood-vessels during the ascending period of life, while they hold surprisingly few in advanced age. Smaller arteries show an augmentation of the nuclei to such an extent that the spindles of the muscle fibres become replaced by rows of minute globules.

Fourth, nerves.—Here and there we meet with medullated nerves, recognizable by their connection with other nerves which exhibit striking changes. Such changes are usually met with in the process of neuritis, but as this is not present in this instance, they must be attributed to senile changes.

Fifth, cartilage.—The appearance of hyaline cartilage in a senile jaw is a most surprising fact, going far to prove that rejuvenescence of the tissues takes place in old age.

Sixth, bone-tissue.—After individual teeth have been lost, their sockets after a while disappear, and when all the teeth are gone, the whole alveolar process fades away. This process is known by the term absorption, but we are not satisfied with the idea conveyed by this expression, for it is evident that a hard, tissue-like bone cannot be so easily disposed of. It must first be reduced to its protoplasmic condition, which can be disposed of more readily. The results of our studies in this direction fully justify us in stating that such changes do take place.

It is a fact that, in advancing age, the bone-corpuscles become less in number, the reason for which is that many of them are transformed into basis substance.

All tissues arise from protoplasm, and all tissues return to this embryonic stage before their absorption. Origin and decline show a striking similarity, and what is between the threescore years and ten is struggle and change of the whole person, as well as of all its constituent parts, the tissues.—HEITZMAN (C.) AND ABBOTT (F.) *International Dental Journal.*

COMBINATION FILLINGS.

The subject of combination fillings is one of great interest to me, and in looking over my records I find that the percentage of these in proportion to the whole number of fillings that I put in is very great. I believe that not one in ten realizes the practical utility of such fillings in the saving of teeth, and I doubt very much if one in twenty uses them to any great extent.

If the teeth are young or old, and of poor quality, to my mind it is much better to put in a combination filling of cement and gold than to fill entirely with gold. Of course, we have all been in the habit of lining up cavities with cements and filling them with gold afterwards. This is a practical and valuable method, and the principle may be extended very materially.

I have been in the habit for some time of putting cement into cavities, and, while the cement is soft, placing plastic gold right into it. By so doing, the gold of itself obtains the necessary retaining points ; whereas, if you put the cement in and allow it to harden, then you must re-excavate and form undercuts to hold the gold. In crown cavities, for example, when the central portion of the tooth is largely decayed, but the overlapping enamel is still sufficiently strong to withstand the force of mastication, either amalgam or gold can be put in, and the surplus cement which is squeezed out by forcing the gold or amalgam into the cavity cut away. After waiting a minute or two for the cement to harden, the filling can be furnished with gold or amalgam, as the case may be. It seems to me that in many cases these fillings are better than if they were made of one material. We find oftimes in connection with a large cavity on the mesial surface of a molar, a small pin-head cavity in the distal surface of the adjoining bicuspid. My experience is, that if I fill these smaller cavities with gold, decay will reappear, and the fillings tumble out.

In such cases I often use tin and gold, a combination which you have heard advocated by Dr. Hamilton and Dr. Briggs, and which was spoken of many years ago in an article by Dr. Abbott, of Berlin. It is very servicable in the crown cavities, of sixth-year molars, also in buccal cavities, and in the temporary teeth. The statement which has been made here by Dr. Hamilton and others, that these fillings after a time become hard, something like an amalgam filling, is a fact which I have demonstrated many times in my own practice. One advantage of the combination of tin and gold is that it does not discolor the teeth, as amalgam. As to the use of amalgam and gold, I know that my combination of these materials lasts longer than the all-gold filling which I formerly inserted in similar cases. Oftentimes, in talking with dentists, I ask them if they use this combination, and they will say "yes," and then remark, "Do you use a matrix?" Thus showing that they have no idea of the proper manner of putting in such filling, and consequently, no idea of their value in saving teeth. To correct such false ideas is the reason for may appearing before you to-night.

The use of cement and gold in the front teeth is, to me, a very important affair. Without first putting in cement in the case of large cavities, or moderately large cavities in the poorer quality of teeth, I feel that the chances for permanent success mall. Cavities in frail teeth, where it is difficult to obtain a good retaining shape, can be filled with gold and cement, and the cement will assist very materially in retaining the filling.

In large cavities, if we can have a considerable proportion of the filling cement, we have a better filling, as there is less metal, and the cement will adapt itself better to the tooth than any other material. Here are specimens showing the method of putting in these fillings. This one shows a large approximal cavity in a molar. If a matrix is adjusted and cement placed in the cavity, and, while it is soft amalgam inserted, the cement will be crowded down next to the matrix, and, consequently, the edges of the cavity will not be completely protected by a metal. To overcome this, I put in the cement before putting on the matrix ; then add a little amalgam, thoroughly incorporating it with the cement ; then trim off around the cavity so that the edge towards the matrix is entirely exposed ; then put on the matrix, and finish with amalgam or gold. In other cases I find it convenient to put on the matrix, and put a little amalgam next to it ; then fill the body of the cavity with cement, and finish with amalgam or gold, or both, as the case may be. The large filling in the lateral incisor, which has been passed around for your inspection, and which, you will remember, is quite large,—restoring the contour of the distal portion of the tooth,—was made in the following manner : The cavity was prepared so that there was considerable undercut at the cervical wall ; there was a slight undercut towards the point. Cement was first put in ; then plastic gold crowded into the cement ; *but the gold did not go into any retaining point whatever.* After waiting a few minutes for the cement to become hard, the filling was finished with odd lots of gold that I picked up around the office, and with an extra hard blow of the automatic mallet. My idea was to see if the blow from the automatic would break up the cement and prevent its being strong. Now, I want this filling tested.* I may suffer a great disappointment to-night, because I don't know how strong the filling is, and it is possible that the gold may have no retention at all in the cement ; but I do know that the mallet was put on very much harder than it would have been if the filling had been in the mouth, and the filling was very thoroughly finished with burnishes, plate-files, disks, and stones.

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* The tooth was then given the President, who removed the filling with strong excavators, and stated that, in his opinion, it was more firmly held in place than would have been poesible in such a cavity without the use of cement.

After seeing the pressure it required to break out this filling, I think I should dare trust it is the mouth. Of course, in filling these cavities, you are laboring under unfavorable conditions.—Clapp.

For years I have not filled the permanent teeth with gold, and it is the one thing that we should impress upon our patients, especially the parents. They say, "Are not these the permanent teeth?" Yes, but gold is not the thing to fill them with. All of the teeth of my patients who have been treated in this manner are better preserved. We all know how much more exhausting it is to fill teeth for children than for adults.—Stockton (C. E.), *International Dental Journal.*

HE CAN DO ANYTHING.

All of us remember that old man so quaintly described by Oliver Wendell Holmes, who had a crook in his back and a melancholy crack in his laugh, and whose nose, the poet tells us, rested on his chin like a staff. He is a rare member of society now. His porcelain teeth fill up the hollow cheeks, and separate the aforesaid nose and chin. If it were in the province of the dentist, I think he would try his hand at straightening his spine, for your modern dentist is an adventursome fellow, and, what is more, he quite often succeeds in his adventures. It is a pastime for him to set a porcelain crown on that broken off tooth of yours, and he will build you up a whole tooth out of gold, or patch up the old one so that it is as good as new, if not better. He will plant you a tooth from somebody else's jaw in your toothless gum, or take out your diseased one, cut off the bad part, and put the rest back. If you have lost your nasal organ, even, he will make you a new nose out of rubber or celluloid, which, if it can't be used for taking snuff, can at least be utilized for holding your glasses on. Was it not a dentist who discovered anæsthesia, that boon to humanity beside which all other gifts of the Esculapian craft are but as hollow mockery, bringing sweet dreams and beatific visions to the tortured body? Was it not a dentist who made the first little glass your throat-doctor uses, and by virtue of which all the useful discoveries of throat-ology were made known? Did not the dentist invent that contrivance by virtue of which when a poor fellow had lost a part of his throat organs, and his speech degenerated into an unintelligble snuffle, his tone is again made clear, resonant and sonorous? Is it not to dentistry that we owe that brilliant conception of the electrical light for the mouth, aiding in the search for hidden diseases?—HODGKIN (J. B.), *Southern Dental Journal.*

MANAGEMENT OF PRACTICE.

The statement that the dentist operates upon living tissues of human beings, is *prima facie* evidence of a stupendous obligation. Many times the life of a patient is weighed in the balance, and a mite of ignorance may sever the life-line. The laws of the community should be indicative of a Nation's regard for the lives of its subjects, and finally, the people themselves should figure for a happy and lengthy stay upon earth, rather than one of torture from poor service and horrible treatment by the hands of licentious quacks.

The first natural emolument then necessary to a successful management of a dental practice is *education.* Many dentists seem to have a fine practice; their offices are crowded with the elite, they live and flourish well, their personal wants are gratified in every way; they have plenty of money. This shows a good business management which may be that and that only. Or, if combined with this, recognized ability may take equal or more than equal share; how often are we led to ask "Does Dr. Blank give competent service for value received?"

Some good operators are ruined by having too many patients. Overcrowding naturally leads to hasty operations with neglect of important and necessary conditions to be fulfilled, and ere long, complaints are made that Dr. Blank is not successful in the art of saving teeth. It is far better to have a limited number of patients and successfully manage these, than to spread ruination among many.

The value of teeth is inestimable, and their preservation by competent masters of this art, a grand science. Who would not be a master of what he professes? Yet there are shysters in every hamlet denuding his good name of every vestige of manliness, by proposing to curtail the expenses of those that seek his service. Conscience is not a part of his education, and a credulous populace are deceived, ruined, and the educated dentist suffers by an unjust comparison. So I must argue that to have successful management one must have education, which should begin as early in life as when duties for right and against wrong are conceived. You may then lead the individual through the various schools of secular and moral learning, and his mind may be enhanced by collegiate courses in literary and scientific schools. Love of art and music may be put into practical use in training for the practice of dentistry. Manuel training is of paramount importance as a supplement to an educated mind. In fact there is such a correlation of accessions to one's education, that it is plainly evident that a broad understanding will give one prestige over the contracted mind of the uneducated dentist. It is true that we often see a good dentist who has not had school advantages. Experience has been his teacher, purchased with the price of many years. Energy has been his main support. The same energy, in use with brains to direct affairs, will always produce the best dentist. There are other items in the conduct of practice to be considered. Let us imagine our student graduated from a reputable college. He locates in a desirable community where he expects to live and become a good citizen. His office is his first consideration. It must be centrally located and of easy access. His rooms should be commodious and convenient for his work; good windows are among the first considerations. These may face any direction, except the direct west. Economy may be found in good carpets and furniture. Elegant furniture should have a place in your home rather than the office, and so should your high priced paintings be placed for your wife and family to enjoy; the office is for business and not for a parlor. Parlors are nowadays used by quacks as offices to make up in appearances what they lack in virtue. The office should be pleasant of course, but it is better to give it the appearance of a professional one. This may be done without an exhibition of skulls and teeth, or specimens that will excite morbid curiosity. Instruments and appliances best suited for your purpose are the greatest consideration in opening an office. Spend more money for these than you do in fixing up your office is wholesome advice. For a dental operating chair and other necessities that will last for many years, it is cheaper to get the best at the very start, and leave the minor appurtenances come in due time, as they certainly must with less trouble. There are many other things that might be said in regard to office equipment. When ready for business hang out your sign; Don't plaster the walls with your placard. A sign of simple construction in a desirable place is sufficient. Patients will hear of you and now your work begins.

The practice of what has been learned at college requires prudence, also much moral courage. Care of your eyes and physical welfare is part of the stock you carry. Drunkeness will not be tolerated. Tobacco is an abomination. These and a thousand other things are required of us, and the most of them are not hard to carry out unless already in the toils of vices. Cheerfulness should be your demeanor when you invite the patient to be seated in your operating chair. Avoid coarse stories or any indication of not being a gentleman, but some pleasantry may serve to make the patient feel at ease. Any frivoliiy will lessen your chances of scientific success. Intimacy breeds contempt. Observe the private rights of the patient thoroughly. It is perfectly proper to let the patient know or see you wash your hands before touching his mouth, and it is a satisfaction to have a clean napkin, or towel, placed over the chest and shoulders, also one upon the head rest. These are slight observations of the management preparatory to an operation. Upon the capability, skill or artifice of the operator to detract from painful operations, his success is often dependent. No two persons are alike, and it may be that with one person he may not succeed well, whilst in the hands of another dentist, the operations prove successful. Happy expedients are necessary very often to master control of the patient. My method, quite often, when a patient insists she is very nervous, is to humor her out of that belief. Each patient is a study, and how to manage the various idiosyncrasies, is indeed quite a large part of the control of practice. Out of the office the dentist should observe proper demeanor, such as become a professional man.

Whatever is worth doing at all is worth doing well, and so we believe that deviations, which are far from our calling, such as politics and any partisan movements, will not aid practice. Studies correlated to the science of dentistry are great aids as well as pastimes. In conclusion, (leaving much to be said by those who will discuss this subject), there remains one item that dentists invariably almost neglect, and that is collection of fees. Dentists are poor collectors. We often hear it said that it is easier to do the work than collect the fee. Upon this part of practice I am weak myself, and don't practice what I preach; but it is certainly correct to send statements of accounts immediately after service is rendered. If dentists everywhere would practice this, we would revolutionize the ideas of your patients, and greater respect for our calling would accrue in the end.—WHITSLAR (W. H.), *Dental Register.*

TO HIS WOULD-BE CRITIC.

The criticism made by an anonymous writer in the *Journal of the British Dental Association* on my allusion to the specialization of the horse's teeth and the reduction from forty-four, the typical number, to forty, calls for a short response, so that the writer, who it seems is too cowardly to append his own name to his articles, may know that the statement which he so unfairly assails is justified by one of the ablest of his own countrymen.

On page 114-117 in "The Horse: A Study in Natural History," by William Henry Flower, C. B., L. L. D., Sc. D., F. R. S., etc., he will find the following information: "The horse, though founded upon the same general type as the primitive Uugulates of the Eocene period, have undergone a remarkable amount of specialization, fitting them in an eminent degree for the purpose they have to fulfill. . . . As mentioned in the first chapter, all the early Ungulate mammals, without exception, had on each side, above and below, three incisors, one canine, four premolars, and three molars,—that is, eleven on each side above, and eleven below, or forty-four altogether. *The modern horse has nearly if not quite, this full number.* The front teeth, or incisors, are the same,—six above and six below,—taking the two sides together. . . . The canines, or 'tushes,' are present, as a rule, only in the males. The cheek-teeth and molars taken together (for there is very little to distinguish them in form or size), are generally but six, instead of seven, on each side above and below. Here, then, is a case of specialization by suppression. One of the teeth of the ancient forms has disappeared. Which is it? The examination of a series of fossil remains shows us that the first of the series—the anterior premolar, a fairly large and well-developed tooth in Phenacodus and Hyracotherium—gradually became smaller and smaller as time advanced. It is still present in Anchitherium, sometimes absent in Hipparion. But has it entirely disappeared in the modern horse? What do we read in old books on veterinary surgery? 'Wolves' teeth are two very small, supplementary teeth, appearing in front of the molar teeth, and supposed to have an injurious effect on the eyes, and are, therefore aften removed by farriers.'

"These little rudiments of teeth, about which such nonsense as the above has been written, are, when properly understood, of intense interest. Their diminutive size, their irregular form and inconstant presence, combined with their history in the extinct horse-like animals, show them to be teeth which, for some reason to us at present unknown, have been very gradually and slowly (as in the case of all operations of the kind) dispensed with, and are, in the stage to which the horse has now arrived in his evolution, upon the point of disappearance. The presence of these so-called 'wolves' teeth' alone is sufficient, if we had no other proof, to show that the horse is not an isolated creation, but one link in a great chain of organic beings. The fact that these teeth are almost always met with in the upper jaw only, should be noted in connection with what has been previously mentioned respecting the dentition of the tapir. The first upper premolar is retained in that animal, while the corresponding lower tooth has entirely disappeared.

"It would be very interesting, if a sufficiently large number of specimens could be examined, to obtain some statistical information as to the relative frequency of the occurrence of these teeth in the different species of wild and different breeds of domestic horses. They are usually so loosely attached in the skull that they become lost in specimens prepared for museums; but indication can generally be seen on the bone, if they have been present."—PEIRCE (C. N.), *Dental Cosmos.*

PLAIN TALK ON "FAILURES."

I do not care to discuss the question as to whether soft or cohesive gold should be used, hand or mallet pressure, all gold and no amalgam, beyond the statement that the dental practitioner who does not use all of them, as indicated, makes a deplorable failure and the practitioner who sees no good in a saved tooth, because its salvation was accomplished with a material other than gold, to my mind fails to comprehend his true mission in the profession he has chosen. I well remember cases in the earlier years of my own practice, whose ghosts haunt me now where failure of judgment, failure to use gutta-percha, oxy-chloride of zinc, or amalgam, cost my patient their natural organs and caused me the mortification of knowing that another failure was charged against me. Contour fillings of gold are good, and the theory that all teeth filled should be restored to their original pristine beauty in form, etc., *sounds* good certainly, especially as it is sometimes elaborately described to us by gentlemen competent to talk upon such subjects. Still every one of you have seen the most outrageous failures from this source simply because the operator was proud of the fact that he could make a beautiful filling in a very frail tooth; deplorable failure in judgment as well as the service rendered.

Within a year I met a man and brother dentist who has been in practice counting his college experience not more than five years, who after some general conversation upon dental operations said: "I have seen some of your operations recently, made several years ago, and could not help criticising them." I asked in what respect; the reply was "you cut away too freely." I asked if the operations were saving the teeth? He replied, "Yes, I found only one which required a slight repair at the cervical margin." He then volunteered the information that in those bicuspids and molars where the dentine had been destroyed by disease, leaving the enamel standing, he tried to preserve that rather than cut it away, thereby exposing so much gold. My word for it, if this man continues in practice he will have some failures which will annoy him and cause his patients to speak after the manner of men, as forbidden in the fifth commandment.

Prof. Black has recently, in a series of articles in the *Cosmos*, given us advice upon the preparation of enamel edges, which if followed would save us many failures in this direction.

Aother *growing* cause of failure, arises from the indiscriminate use of the dental engine and burs in the preparations of cavities for filling; I have seen so many instances where the cavity was the shape of a round bur, the enamel edges so thin that the most delicate manipulation with the finest instruments could not prevent their fracture, also in many localities it would be impossible to pack the gold into the undercuts so made. I have always feared the use of the bur in deep cavities, or in those where it was dangerous to cut to any considerable depth, the hole being filled with the fine cuttings of the dentine, making it next to impossible to know what one is doing.

Recently two sisters applied to me for advice regarding their incisor teeth, which were considerably discolored, the usual tests convinced me that the pulps were dead. I removed some of the fillings verifying my diagnosis in this direction and finding the cavities formed as I have mentioned above, when burs were used. I commenced a course of questioning, which proved to me that these cavities were wholly prepared with burs, and that in each instance an exposure of the pulp was the result, consequently abcesses, discoloration and disfigurement.

A prominent dentist and careful operator in my office recently remarked "that some operators seemed to feel that they knew just where to look for a pulp canal and seemed to think that when necessary to open them for treatment, they could with a very fine drill and the engine, go through the crown and hit them every time;' his experience had been, however, that they as often went through the side of the root, through between the roots at the bifurcation, or at some other point, endangering the chances of saving the tooth. This is even a greater failure than those already mentioned, arising from too free use of the dental engine. Another dentist present a teacher, suggested that students should not be allowed the use of the engine during the first two years of their pupilage. Another, a Professor in one of our Dental Schools, not willing to go quite so far, was of the opinion that more attention should be given this subject in the education of dental students. I do not condemn the use of the engine, or burs; instead, I find them very valuable aids, but if we would avoid such failures as mentioned, we should use great care and discrimination when we do use them.

Another source of many failures I believe arises from the use of deeply serrated gold packing instruments. It can be readily understood, that where comparatively large pellets are used, the long, sharp points pass entirely through, and not only fail to pack the gold against the walls of the cavity, but even pulverize them, leaving under the gold a layer of chips of dentine, thereby preventing the possibility of a moisture proof filling; and furthermore I have come to believe that much of the discoloration seen beneath thin walls, especially in incisor teeth, is due to the failure to remove all the dust produced by preparing the cavity.

Why do we speak of recurring decay about a filling of years standing as a failure, especially if that tooth has been filled with gold? Has this material properties in its pure metallic state which will prevent caries of the teeth? It is not antiseptic, and only answers the purpose best because it is soft and can be coaxed to remain in place when once fixed, if properly done; excluding moisture, particles of food and decomposible secretions which are always present in the mouth, the same conditions exist, the same tooth is composed of the same materials, weakened in its powers to resist diseased conditions now because of the disease infecting it years ago; to convey the idea to our patient that a tooth once filled with gold, is in the future safe from further disease, is one of our greatest failures as professional men. Did you ever hear of a physician assuring his patient that when he had once mastered the present attack, they would be exempt from similar ones in the future? That a bone once healed would never break again?

Is it not true that one has to grow old in practice, before he has the courage to say to his patron, "little of the work I do for you can be pronounced other than temporary, and in proportion as your teeth are now liable to caries will these operations require to be repeated;" here we fail in courage.—Swain (E. D.), *Dental Review.*

THE MOUTH.

The study of this feature is of paramount importance to us as dentists, and a good classification of its many varieties is much to be desired, so that we may be enabled to recognize the different varieties as they are presented to us. To this end the ethnical classification is the best, and will aid us in mastering the pecularities of its many forms and contours. The passing expressions of the mouth are not to be included in this catagory, as they are trancient, although some of them may have an ethnical significance and may have been the origin of permanent modifications of the features. But here again we are met by the discouraging fact of the insufficiency of data from which to construct a clasification of the many forms of the mouth and lips presented, with a view to their ethnic analysis. This feature is probably not subject to the influence of the mixture of races, and is not as disposed to form composits as many of the other features. It is usually of pure typal form, and may or may not be in harmony with the other features as regards their ethnic type. As the descendants of the European races are greatly mixed, the face is rarely pure and harmonious, but is usually a heterogeneous compound. So it happens that the mouth is rarely in harmony with the rest of the features; but when it is, when harmony of a pure type prevails, the result is real beauty or at least a pleasant satisfaction to the eye. But as a rule all ordinary faces are ordinary or worse, because of the deficiency and inharmony of one or more of the features. The inharmonious feature is often the mouth, and hence the fallacy, as is often recommended, of studying all the features together in order to secure the most harmonious arrangement of artificial teeth. If dealing with pure types, this might be good philosophy and perfect art, but in mixed people it is misleading and will result in incongruities. The only guide is the mouth, with the teeth, by themselves. The mouth, being usually pure in type, is its own best guide. It is rarely a composite, and so its peculiarities have a distinct value.

As regards its ethnical varieties, we notice first that among low races the mouth is wide, with thick, shapeless lips and drooping corners. As we ascend in the scale of advancement we find it contracting in width, the corners more upturned and sunken, the edges of the lips assuming a sharp, graceful curve, and the fullness much reduced and contracted to the middle of its length. The straight shapeless lips, with drooping ends, usually wear that plaintive, sad expresston so characteristic of wretched people, who are miserable either from their struggle with nature, or from the oppression and injustice of higher races. A life of weary suffering leaves its mark on the lips first in a race as well as in the individual. The wide mouth with thick lips in a race as well as in the individual. The wide mouth with thick lips is found through the higher races of Europe, and is inherited from the Australoid and Mongoloid races, as it comes from these primal types.

There are many peculiarities of the mouth which are characteristic of minor races, and which would be very interesting if they could be read aright. The mouth of the Latin races, especially the Spanish. is clear cut, the margin arched like "Cupid's bow," being full in the center and depressed at the corners. It is usually accompanied by the small arched Latin jaw, the combination forming a beautiful type. Then there is the mouth with the upper lip fuller than the lower and overhanging it, or the protruding lower lip. These types are often seen in Europeans, and are sometimes handed down in families. There are other peculiarties which are marked and conspicuous, and which must be ethnical, could their lineage be traced. This branch of our subject will be of especial attractiveness to pursue, on account of our professional interest in the mouth.—THOMPSON (A. H.), *Dental Cosmos.*

TO LANCE OR NOT TO LANCE.

A recent publication by a writer of acknowledged authority, whose book has received favorable notice by the medical journals, condemns the operation of gum-lancing as a therapeutic measure for the relief of certain pathological conditions incident to the first dentition, on the following grounds:

"I. It is useless: *a*, as far as giving relief to symptoms; as far as facilitating or hastening teething.

"II. It is useful only as blood-letting, and ought not to be used as such.

"III. It is harmful: *a*, in producing local trouble; *b*, in producing general disturbances, on account of hemorrhage; *c*, in having established a method which is too general to do specific good and too specific for universal use.

"IV. It is to be used only as a surgical procedure to give relief to surgical accidents."

A critical examination of the grounds upon which he bases these remarkable conclusions reveals a deplorable ignorance on the part of the author of the anatomical relations of the tissues involved in the teething process, as well as of their physiology. He is equally in the dark as to the causes of pathological disturbances arising from abnormalities in the process of dentition. While he recognizes fully the coincidence of certain grave systemic and nervous disorders with the process of dentition, he regards them only as coincidences. He "does not admit that on theoretical ground convulsions are caused by teething," but deems that such a connection may be possible." He says, "as a matter of fact, gum-lancing neither prevents nor cures convulsions due to teething in all instances," and that "convulsions that can be cured by gum-lancing can be cured by the most simple means,—lukewarm bath, a mild laxative, a full dose of bromide of potassium; they will get well of themselves if the physician will be wise enough to remove the cause, which must be looked for everywhere else than in the teeth." His understanding of the rationale of gum-lancing is embraced in the following quotation; "Locally the sacrification does nothing except let blood; the idea that tension within the sac is relieved is a purely imaginative one. There is no tension within the sac, and, as has been shown, there is more than enough room for the tooth, so that under normal circumstances pressure within the sac or upon its bony surroundings in all directions becomes an anatomical impossibility. Under abnormal conditions lancing of the gums has no effect upon the condition within the tooth-sac." Througout the treatment of this phase of his subject he uses the terms sacrification and lancing synonymously, a confusion of terms naturally to be expected in the mind of one who has lost sight of the principal, if not only, reason for the operation of gum-lancing; namely, for the relief of irritation not of the overlying gum-tissue, but of the formative pulp of the erupting and developing tooth, caused by backward pressure upon it by the margins of the incompletely-formed root, due to the unyielding resistance afforded by the gum to the normal eruption of the tooth. Perhaps the most lucid explanation of his whole attitude of antagonism to the operation in question is to be found in the following quotation; "In my whole experience I have lanced the gums once; then at the earnest solicitation of a consultant; the result was *nil.*"—EDITORIAL, *Dental Cosmos.*

ON EDGE.

I could so much more easily have written on some other subject. I might have called my paper "Confessions." Not of an opium eater for De Quincy has made that a classic in English; nor of a religious fanatic, who argues the point of whether life is worth living, for Tolstoï has been before me in Russian or French and is living up to his doctrines. I should not have written the confessions of a trichloride of gold patient, the newspapers have done and are doing that. My confessions would have been simply the confessions of a dentist—an every-day dentist—a—"dollar a day" dentist (I have left a space before the dollar so that it can be read a 20 dollar a day or a 100 dollar a day dentist as you please). A dentist, I mean who is occupied as we all are' in the "demnition grind" of life, such as Mantalini found at the mangle. A dentist who, when he dies can expect no greater praise, no more picturesque epitaph than the following:

> "He never gained immortal fame,
> Nor conquered earthly ills,
> But men mourn for him just the same,
> —He always paid his bills."

The confessions of such a man I might have written, and you, my dear hearers, and you, the unnumbered host of readers who would perhaps see my confessions in print in the dental journals, might have had the opportunity of seeking solitude, to relieve the discharge of feeling and the flushings of lacrymal ducts that might follow. And the discharge and the flushings would do you good. You are all "on edge." You live in a continual strain; straining to suppress within the bounds of law and order, the law and order established by society and called politeness—your natural feelings. You have, all day long in your offices, the disagreeable tingling sensations perceptibly creeping up every afferent nerve and down every efferent nerve in your bodies, the sensation defined by Bacon as resulting from bringing an acid in contact with the enamel of the teeth. You are conscious during every minute which you spend in your operating rooms, that you are on edge, on *the* edge of a yawning precipice. The precipice is not there any more than the acid is in contact with your enamel, but the *sensation* is, and you suppress it and maintain an outward appearance of placid dignity, or interested kindliness, or tender sympathy. You are like the Spartan youths, who are reported to have looked steadily and with smiling denial on their faces, into the accusers eyes, while the foxes concealed in their bosoms were gnawing at their vitals.

Why have we these foxes gnawing at our vitals? Why are our "nerves" on edge?" It is because that for from eight to ten hours each day we are engaged in the performance of delicate and trying surgical operations. It is because some of our surgical operations require so much time and endurance that our nerve-centres become exhausted from the long continued stimulation. It is because we must give so much of what pschycologists define as *artificial attention*, which is a very different article from the spontaneous attention of the child or the savage. This sort of attention is a cultivated effort on the part of the will, and is a direct exercise of nervous force with a complicated inhibitory strain on a large number of motor nerves. It is because we have no diastolic recuperation. The systolic period is too long; it lasts all day. The general surgeon who begins with his knives and saws at 8 o'clock *every* morning and employs them upon one patient after another without rest until 5 o'clock in the afternoon is on edge, just as we are. The mechanic who uses saws and knives in a shop, works 10 hours each with comparative ease and does not understand what being "on edge" means. The dentist who works at the bench in his laboratory, no matter how delicate and skill demanding his labor may be, is not "on edge." He enjoys labor as an artist can, and he might solder and carve 12 hours a day and keep it up for fifty years without suffering nervous strain or exhaustion. But the man who *adapts the appliance* to the *living tissues* is engaged in an entirely way. He is engaged in surgery, and surgery is *per se*, an excitor of nerve-centre activity. Mechanical operations are not. Surgery implies manuel operations, but it also implies healing, and our title of D. D. S. implies the healing by manuel operations certain lesions of the living body. The driving of a threaded needle through the lips of a gaping wound and taking stitches to bring these lips together; afterwards when living matter has succeeded in sealing the sides of the wound together by a sticky exudate and has sent out cells and buds to repair and regenerate the severed tissue and reinstate the circulation of blood through repaired blood-vessels,—to remove the stitches is a very simple surgical operation. As far as the manuel operation is concerned it is very much like the tailor's work on a rent in one's garment and the taking out of basting threads. But the tailor can sit cross-legged on his table the live long day, and can sing and whistle and never suspect that he has nerves or nerve centres, while the surgeon expends in fifteen minutes nervous force enough to run an entire tailoring establishment. The surgeon is on edge, delicately sharpened, keenly ground to a cutting edge, and the tailor is like a blunt hammer in comparison. There is no *edge* to be destroyed. The dental surgeon has the edge sharpened like a razor and yet he hacks away for eight continuous hours each day and expects to recuperate sufficiently each night. I need not detail the thousand and one things, tough things, hard things, that come in contact with this fine edge every hour in our daily practice. You who have been in practice for ten years and who started in with a great supply of elasticity and resisliency, have not begun to suffer much. You rather enjoy the kicking against the pricks. You who have gone around the track for another ten years and reckon your dental experience as a twenty year one, begin to suspect that your work in life is extra hard. You who have had thirty years of this mill of the gods, feel dead certain that it "grinds exceedingly small." You are the men whose long and broad experience has taught you to entertain a collossal respect for the nervous system of man. You are the men who study with the deepest personal interest the physiology of nervous matter, and wonder at the corallated force that presides over every contraction of a muscle cell, that grasps with an intelligent hand every blood-vessel, ready to respond in an instant to the slightest call for an increase of the life giving fluid to any tissue or organ or part; that maintains with never ceasing oscillations the heat producing and the heat reducing conditions of the tissues, so that the temperature is regulated more perfectly than by the delicate apparatus on the vulcanizers in our laboratories; that adjusts the supply to the demand for nourishment from every remote cell in the organism; this nervous system with its centres keenly sensitive to everything within and without the body and ready to respond to every impression. You are the men who appreciate that this sensitive system cannot last forever and that you are driving it to its utmost capacity in your daily work. You have held a tight rein upon these centres for thirty years in your daily and hourly operations in order that you might (unconsciously though it may be) influence by *suggestion* the nervous centres of all classes and conditions of minds as presented by your patients. In one day you will exercise this suggestion at the expense of your own stock of physiological force on old men and women, and boys and young girls, and children and hysterical mothers. After each case, be it more or less trying, you bob up serenely and begin again the struggle. Your calm face does not tell the secret of your palpitating heart and quivering nerves. Perhaps some of my hearers do not quite believe in the truth of the picture presented here. They may point to the pioneers in our profession who are still vigorous, intellectually and physically. We of Cincinnati well remember our departed friend, Dr. A. Berry, an octogenarian, and a man of unconquerable vitality. He it was who pooh-poohed the idea of men becoming exhausted by eight or ten hours a day, and boasted that sixteen hours per day would be a fair day's work for a dental surgeon. He laughed to scorn a young man who complained of his *nerves*. But Dr. Berry was an exception to the rule among men. He had his own methods of relief from the strain of daily practice. I have studied him well. Firstly, Dr. Berry did a large share of laboatory work himself. This is a relief from surgery. Secondly, if I may be permitted to say, with deep respect for his memory and as a friend and admirer, Dr. Berry constantly found vent for his over-charged nerve centres by vigorous invectives against what he considered wrongs and abuses in other men's diet and morals and religious doctrines. Why; the situation of our Garfield monument in the middle of Race street must have added months if not years to Dr. Berry's nervous activity; for it furnished to him a constant escape valve for the the compressed and surcharged nervous excitations caused by daily practice. His ever ready and picturesquely expressed anger at the idiocy of people who would permit a monument to be placed in the middle of a thoroughfare to frighten horses, certainly acted exactly like a steam valve well set to blow off when the pressure reached a certain point, and the boiler is saved from strain.

The nervous system is so delicately *en rapport* with the entire world about us, and the most minute particle of matter within us, that the advanced students of physiology feel like babes playing on the sand with an unknown ocean of knowledge spread out before them, and just as the pebble that is cast into this ocean by the child on the shore causes waves to circle about it and widen out to eternity, so every impression upon the nerve centres may cause ripples that will be felt in generations yet to come. Every time a child is spanked a wave of trouble washes the control centres and the reflexes set every cell or every spoke of living matter "on edge," and nutrition, function, and development is affected, favorably or unfavorably. How do we know that the faults that we call congenital, let us say even in the enamel of the adult tooth, the weak spots that cannot resist the invaders, the soil that proves suitable for pathogenetic micro-organisms were not made predisposing causes by faults in nutrition, and that these faults in nutrition were owing to nervous impressions excited by pain from the concussion of the mother's hand upon a sensitive nerve, situated at a very remote distance from the enamel-forming organ of the child? Have you ever thought upon this aspect? Richter asks, "Have you—learned men, ever stopped to calculate the effect of a mother's scream on the character of the unborn child?" and I ask, Have you wise dentists, ever stopped to calculate that the defective spots on the enamel might have been caused by the spankings received in babyhood? Es ist nicht unmöglich.—Wright (C. M.), *Ohio Journal.*

THE "WILCOX BILL."

Those who were present at the New York State meeting last May will readily call to mind the mission and remarks of Prof. Winder in regard to a recently introduced bill in the lower house of congress, and which was even then well on its way to the senate. This bill, innocent enough on its face, extended the scope of inquiry of the census bureau to that degree that such inquiry, when applied to professional men, it became "inquisitorial;" trespassing wantonly on the rights of a class of citizens whose only offense consisted in the following of a calling whose product did not permit of measurement in terms of pecks and pounds. The bill sought to do this, too, under a penalty of not more than ten thousand dollars and imprisonment for one year, the latter to be added to the money fine at the discretion of those in authority.

The further history of the matter may be gathered from (a) the bill, (b) the circular issued by the committee of which Prof. Winder was chairman, (c) the "argument" prepared by Prof. Winder, and (d) the saving provision or "addendum."

The "bill" as introduced by Mr. Wilcox was characterized as "A bill amendatory of an act to provide for the taking of the eleventh census," and read as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections fifteen and seventeen of the act entitled "An act to provide for taking the eleventh and subsequent censuses," approved March first, eighteen hundred and eighty-nine, be, and the same are hereby, amended so that the Superintendent of Census shall be required to obtain from every incorporated and unincorporated company, firm, *association, or person engaged in any productive industry*, the information called for and specified in the general and special schedules heretofore approved *or to be hereafter approved by the Secretary of the Interior.* And every president, treasurer, secretary, agent, director, or other officer of every corporation engaged in such productive industry, and every person, firm, manager, or agent of unincorporated companies, and members of firms, *associations, or individuals likewise engaged in such productive industry*, from which or whom answers to any of the inquiries contained in the said schedules are herein required, who shall, if thereto requested by the Superintendent, supervisor, enumerator, or special agent, or each or any of them, wilfully neglect or refuse to give true and complete answers to any inquiry or inquiries contained in the said schedules, or shall wilfully give false information in respect thereto, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding ten thousand dollars, to which may be added imprisonment for a period not exceeding one year. And all acts or parts of acts in conflict herewith are hereby repealed.

The "circular" issued by the Baltimore committee read as follows:

Find enclosed copy of the "Wilcox Bill," which has just passed the House of Representatives in Washington, D. C., and our "argument" in defense of the Dental Profession.

This bill, of course, has to pass the U. S. Senate before it can become a law. It behooves you to use every means in your power to influence your senators in congress to oppose it with might and main.

The bill is so insidiously drawn that not one of our Representatives, whom we have interviewed, had ever suspected that it meant to include professional men—either physicians or dentists.

You will see from the bill that it gives full power to the Census Bureau or Secretary of the Interior to decide what shall be considered "a productive industry," and the power, under a heavy penalty to inflict a great wrong upon whom they please. It is a most flagrant outrageous and pernicious attempt to put up a legal inquisition. For the love of your profession and respect for your position in it, use all efforts to instruct your own senators to vote against this infamous outrage and ask your members of congress to use their influence in our behalf. You can do this by a personal letter to them, or you can forward petitions from all over your State. *There is no time for delay*—moments are precious—so be up and doing. All the State societies, which have met up to date, have appointed committees instructed to resist this "Bill,"—Connecticut, New York, Pennsylvania, New Jersey, Maryland, and North Carolina.

Congress has just passed a law which has been signed by the President recognizing dentistry as a profession in the District of Columbia, and a dental examing board will be at once appointed. The Washington City Dental Society will aid in defeating the Wilcox Bill, and if the dentists from all the States will appeal to their senators and representatives in congress at once, the bill will be defeated to a moral certainty.

We have been informed by those who know that the more our senators are petitioned in this matter, the greater the certainty of our success.

This was signed by Drs. Winder, Sr., Nelson, Waters, Volck, Mills, Genese, and Twilley.

The "argument" accompanying the above was unanimously adopted at the last annual meeting of the Maryland State Dental Society, held in Baltimore, on May 9th and 10th. It was addressed, "To the Senators and Representatives of Maryland, and other States, in Congress assembled," and read as follows:

WHEREAS a bill has been introduced in congress, which provides that any person who shall neglect, or refuse to give information to census officers, shall be subject to a fine, "not exceeding ten thousand dollars, to which may be added imprisonment, for a period not exceeding one year," and whereas the public press reports that the bill referred to, "will be used in the nature of thumbscrews and spiked boots to enforce replies," and further, that "the dentists of Baltimore, who by their refusal to answer certain questions * * * * * * will be the first victims of the inquisitorial machine if the bill is passed;" therefore,

Resolved, That this Association re-affirms the resolution unanimously passed November, 1890, protesting against the action of the Census Bureau, in classifying dentists as manufacturers and refusing to fill out blanks.

Resolved further, that the chairmen of the several standing committees, as now constituted, be appointed to convey the sentiments of this Association to the senators and representatives of Maryland in congress, and urge them to have the bill referred to amended, so as to omit dentistry in all its branches, from the tabulations of the census.

We therefore, the undersigned, the committee appointed in accordance with this resolution, respectfully submit the following to your consideration:

1. Dentistry is recognized as a profession by law. Dentists are not required to serve on juries; they have been recognized as professional men, to wit: in the case of Noble, before Judge McArthur of Washington city. The dentists of Baltimore have always been excused from jury duty.

2. Nearly all States of the Union have passed laws recognizing them as professional men, and in some of the States license fees are demanded from both physicians and dentists for the privilege of practising, and both are equally amenable to the law of malpractice.

3. Most of the States have appointed examining boards, to test the fitness of candidates for practice, similar laws are made bearing on the medical profession.

4. Maryland, Pennsylvania, New York, Massachusetts, Michigan, Minnesota, Kansas, Iowa, Illinois, Indiana, Missouri, Tennessee, Georgia and Louisiana, have through their respective legislatures granted charters to dental colleges, giving them authority to educate students in dentistry, and to confer upon those properly qualified the professional Degree of Doctor of Dental Surgery.

5. In the National University's dental department in the city of Washington, D. C., the diplomas are signed by the President of the United States. This we think originated with General Grant.

6. Almost all the great universities including those of the city of Washington, have added dental department, and are granting professional degrees by the authority of the United States Government.

7. The American Medical Association has recognized dentists as specialists in medicine, and the International Medical Congress of the whole civilized world has done the same.

8. Dentists have given to the world the first anesthetics, both nitrous oxide gas and ether, which Dr. Oliver Wendell Holmes has declared "the greatest boon ever given for humanity." They have also furnished the first splint really satisfactory in the treatment of fractured jaws. This splint was applied in the case of the Hon. W. H. Howard, with entirely satisfactory result, and this after the medical profession had utterly failed to reduce the fracture.

9. Both general and oral surgery are impossible without mechanic and all operations both in general and oral surgery are more or less mechanical.

10. In the past, both surgery and dentistry were classed among the trades; but time, progress, cultivation and advancement have altered the condition of things, and to day surgery has its place on the top round of the medical ladder.

11. The manufacturer makes out of certain materials a new product and offers it on the market for general and indiscriminate use, as for instance a brickmaker does.

12. Dentists are not, in the ordinary acceptance of the term, either mechanics or manufacturers, any more than the general surgeon. He applies his manufacture, such as improvise splint or pessary, as the case may be, altering his product as the necessity of the case may demand, and does this through his professional knowledge of anatomy, etc., aided by manipulative ability and mechanical skill. The dentist does precisely the same thing. The occulist adjusts and fits artificial eyes by fitting and grinding as the dentist does artificial teeth.

13. Artificial sets of teeth cannot be offered for sale giving each customer an opportunity to select what he likes, for no set of teeth could fit, or ever be fitted, any but the one individual for whom it was especially made ; therefore, no one can select a set of teeth as he might a hatchet or handsaw or any other manufactured article in market.

14. Dental manufacturers are never classed by business men with dentists; we are a separate and distinct body of men.

15. The Census Report of 1880 declares, "That persons following individual pursuits shall be classed together," and we find in that Report headed, "persons engaged in selected occupations," lawyers, physicians, dentists, druggists, preachers, etc., classed together. That in the census of 1880 the precedent is established ; and as a matter of fact, under instructions from the Superintendent of the Census, Gen'l Francis A. Walker, the reports which dentists made in the city of New York were returned to them, and no further attempt was made to classify them as manufacturers, and we respectfully refer you to the correspondence between Dr. Thomas E. Gunning, of New York and Gen'l Walker at that time.

16 The druggist from manufactured ingredients makes a new product to relieve suffering humanity. The dentist does the same thing.

17. We would call your attention to the fact, that all the materials used by dentists, have or should have been classed under the head of "dental manufacturers." This is true of gold and other metals used in dental practise as well as of instruments, artificial teeth, rubber, etc.; there is no exception to this.

18. Many dental associations have forcibly expressed their sense of the great wrong done to the dental profession by being classed with manufacturers, when no other specialty of medicine is so treated.

We would appeal to your sense of fairness. We claim to be a respectable and law abiding profession and ask justice at your hands. For more than fifty-one years we have worked steadily and faithfully to gain our position and standing. This effort dates from the founding of the first College of Dental Surgery in the city of Baltimore.

We trust you will see the injustice of deposing us from our honorably acquired position as professional men, and relegating us to our starting point. We appeal to you, as officers of this great country to save us from this great wrong, which will undo the work of half a century.

You can readily replace us to where we were in the census of 1880, in the list of "persons engaged in selected occupations." At this time all Dental Colleges in the United States are raising the standard of culture, and have increased the time required for preparation for graduation from two to three years.

A rigid examination has to be passed in anatomy, physiology, pathology, histology, therapeutics, materia medica, chemistry and oral surgery, before the Degree of Doctor of Dental Surgey is conferred. Is any such requirement made of any manufacturer?

Leaving this statement in your hands, we feel confident, that when fully informed of the facts of the case, you will in your wisdom do justice to our profession.

It was signed by the same committee.

The "addendum" to the bill is to the point, and the signing of the document in its present form by the superintendent of the census bureau releases lawyers, physicians and dentists from further annoyance at the hands of census enumerators. This provision read as follows:

Providing, that nothing in this act shall be constituted as authority to collect statistics from professional men, such as lawyers, physicians and dentists.

Prof. Winder and the gentlemen associated with him in this work are entitled to great credit for their prompt action, also the gratitude of all members of the several professions benefitted by the successful termination of their effort.

"GREATEST GOOD TO THE GREATEST NUMBER."

There is no remedy really good in medicine which is not capable of mischief. More persons are killed each year from the abuses of opium than have been attributed to chloroform from its discovery even to the present time. Deaths annually from opium in England alone are numbered by the hundreds. How many thousands are to be added to this list occurring under the careful administration of skilled physicians, we can easily conjecture. Yet who proposes to substitute for this king of drugs any of the milder narcotics? We are ready to accept the comparatively small fatality for the immense good it accomplishes. How often during the summer do we find in the daily papers reports of healthy persons dying suddenly from the too liberal potation of ice water, yet who would listen with any patience to the so-called philanthropist who would wage war against this universal beverage? It has been stated that more persons are killed by slipping on fragments of orange peel in the streets of London than from the inhalation of chloroform. No one suggests the destruction of orange groves on this account. No one finds fault with the laws of gravitation because persons continue to fall down and break their legs or necks. It is unfortunate for the individual, but the great laws of Nature must ever go on, and the great designs of the Creator enjoyed with wonder and astonishment. Shall we give up the use of horses or steam because accidents happen from both? Would we have all the rivers dried up because now and then a dead man is fished up out of them? The great discoveries are for the good of the many—not for the few. You can not avoid every danger and at the same time enjoy every good.

With the careful administration of anæsthetics, the little risk, infinitesimally small, is immensely counterbalanced by the protection from the many dangers during operations, so well known and so often experienced when operations were performed without them. Chloroform, when judiciously used, is one of the safest active remedies of the materia medica, supplying nearly every good and avoiding nearly every danger.—Chisolm (J. J.), *Microcosm.*

THE NEW DENTAL LAW.

The dental law approved by the governor May 12th., 1892, is of absorbing interest to every young man about to begin the study of dentistry in this State, and none the less so to the graduate who would enter upon practice within its jurisdiction. It will bear not only reading, but study, and especially by those just mentioned. Following is the law complete:

Section 1. No person shall practice dentistry either as principal, agent, assistant or employe, in the state of New York, or advertise or hold himself out to the public as so practicing dentistry, who shall not be licensed and registered as prescribed by this act. Any person who shall practice dentistry or advertise or hold himself out to the public as practicing dentistry in violation of this section, shall be guilty of a misdemeanor, and upon a first conviction thereof shall be punished by a fine of not less than fifty dollars; and for every conviction of said misdemeanor subsequent to the first, the person convicted shall be punished by a fine of not less than one hunnred dollars, or imprisonment, or by both fine and imprisonment.

§ 2. A person only shall be deemed to be licensed to practise dentistry in this state who shall have attained the full age of twenty-one years, shall have had properly granted to him or her either by the Dental Society of the State of New York or by an incorporated medical or dental school or college, approved by the Dental Society of the State of New York, a proper diploma conferring a recognized medical or dental degree, and shall have made the registration required by section three of this act; provided, further, that no diploma shall be deemed valid within the provisions of this act if conferred irregularly, through fraud or false representation or without substantial compliance by the person to whom it may have been granted or the corporation conferring it with the general statutory requirements of this state as to course and duration of preparatory and professional study, and also with the regulations of said state society and of the corporation conferring the diploma as to study, attendance, examination and character, or if conferred by a school or college not recognized by said society as reputable and providing an adequate course of instruction and maintaining a proper standard of attainment, character and attendance; provided, also, that all persons lawfully licensed and registered at the time this act shall take effect shall be deemed lawfully licensed and registered hereunder, subject only to the provisions of section three of this act as to removal of practice.

§ 3. Every person practicing dentistry in this state shall register in the office of the clerk of the county where his place of business is located and in the office of the clerk of any county, into which he shall remove or in which he shall carry on his business, in a book to be prepared and kept by the clerk for that purpose, his name, age, office and post-office address, legal authority for practicing dentistry in this state, and the date of such registration, which he shall be entitled to make only upon presenting to the county clerk a certificate from the member of the state board of censors appointed by the State Dental Society for the judicial district in which said county is situated, to the effect that said applicant for registration has received a proper diploma, as provided in section two of this act, and upon the making by said applicant of an affidavit stating his name, age and legal authoriiy to practice dentistry within this state. Every such certificate of a censor shall be filed by the county clerk receiving it, and every person admitted to registration under the provisions of this act shall be entitled upon the payment of a fee of fifty cents to the county clerk to receive from that official a certified transcript of his registration. All the affidavits made in pursuance of the provisions of this act shall be preserved in a bound volume by the county clerk in whose office they are made. Provided, however, that all registrations lawfully made prior to the taking effect of this act shall continue to be as valid and of the same effect as when made. Provided, also, that any registration procured by fraud or false statement of any kind shall be deemed null and void; and that the county clerk upon the presentation to him of a certified copy of the judgment convicting any person of a violation of the provisions of the dental law shall note the fact and date of such conviction upon the registration. If any affidavit made pursuant of the provisions of this act be wilfully false in any material regard, the affiant shall be deemed guilty of perjury and punishable by imprisonment for not less than two nor more than ten years. Any person who shall sell or barter, or offer, either orally, in writing or by printed advertisement, to sell or barter, or who shall by purchase, barter, fraud, false statements, bribe or promise of bribe, and without compliance with all provisions of law any diploma purporting to confer a medical or dental degree, or any certificate, transcript, or registration provided to be given under this act or the statutes regulating the practice of medicine; or who shall substitute on any such diploma, certificate or transcript for the same of the person to whom the same was given or granted the name of a different person, or shall fraudulently alter such diploma, certificate, transcript or registration in any material regard, and any person who shall use or offer to use any such diploma, certificate or transcript as a license or color of license or means of obtaining license or registration as a practitioner of medicine or dentistry shall be guilty of a misdemeanor; and upon conviction thereof shall be punished by a fine of not less than five hundred dollars or by imprisoment for not less than six months, or by both fine and imprisonment; any person who without a proper diploma conferring the same shall assume the title of doctor of dental surgery, or master of dental surgery, or shall append to his or her name the letters D. D. S., or the letters M. D. S., or any other letters specifically used by any medical or dental college, school board or society to indicate that the person to whose name they are appended holds a recognized medical or dental degree shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than two hundred and fifty dollars or by imprisonment for not less than three months, or by both fine and imprisonment; all fines and forfeitures of bail imposed and collected in consequence of violations of this act shall be paid to the Dental Society of the State of New York; provided, that if at the annual meetings of said society the treasurer shall report an excese of the sums so paid over the expenses of the society in enforcing this act, such excess shall be paid over by him to the treasurer of the state and become part of the common school fund; provided, also, that any such fine or forfeiture imposed in an action brought by an incorporated county medical society for violations of the provisions of this act relating to medical diplomas shall be paid to said prosecuting society.

§ 5. Sections eight, nine and ten of chapter one hundred and fifty-two of the laws of eighteen hundred and sixty eight, shall read respectively as follows:

§ 8. The State Dental Society organized as aforesaid having already at its first meeting appointed eight censors, one from each of the said district societies, to constitute a state board of censors, divided into four classes, to serve one, two, three and four years, respectively, shall at each annual meeting appoint two censors, to serve each four years, and until their successors shall be chosen, and fill all vacancies that may have occurred by death or otherwise. Each district society shall be entitled to one, and only one, member of said board of censors. Said board of censors shall meet at least once in each year, at such time and place as they shall designate, and, being thus met, they, or a majority of them, shall carefully and impartially examine all persons who are entitled to examination under the provisions of this act, and who shall present themselves for that purpose, and report their opinion in writing to said State Dental Society, and on the recommendation of the said board, it shall be the duty of the president aforesaid to issue a diploma to such person or persons, signed by the president, the secretary and said censors, and bearing the seal of said society, conferring upon him the degree of "master of dental surgery," (M. D. S.) and it shall not be lawful for any other society, college or corporation to grant to any person the said degree of "master of dental surgery."

§ 9. The State Dental Society shall have the power to determine what medical and dental colleges maintain a course of education and training adequate in duration and standard to entitle their diplomas to be approved and certified by the censors as qualifying their holders to be licensed to practice dentistry in this state, and so registered. Said society shall admit to its examinations, provided for in section eight of this act, only the following classes of persons, upon satisfactory proof of good moral characters:

First. All duly licensed and registered dentists of this state.

Second. All persons coming from other states or countries who shall present to said society satisfactory proof of having been lawfully engaged in the practice of dentistry without the state for the term of six years.

Third. All such persons as shall have studied dentistry for a term of four years in the office or offices of some reputable and duly licensed and registered dentist or dentists of this state and shall have in other respects conformed to the regulations governing such examinations, which regulations not inconsistent with this act said society may make and must publish at least twice in each calendar year in a leading dental journal Every person actually engaged at the time this act takes effect in studying dentistry under private preceptorship as aforesaid must within three months from the passage of this act file with the secretary of the State Dental society, a statement of his or her age, present address, commencement of terms of study and the name and address of his or her preceptors, who shall also certify that said statement, so far as it relates to himself, is true. Any person beginning such a course of study after the act takes effect shall file a similar certificate, and until it shall be made the term of four years required by the statute shall not be deemed to be commenced. No such student shall be eligible for examination for its diploma by said society who shall not have filed one of said certificates, all of which shall be preserved, bound and indexed by said secretary. Any wilfully false statement in any such certificates shall preclude the person making it from the privilege of examination. The censor for each judicial district of said society shall be empowered to examine any applicant for the examination or certification of diploma granted under this act as to his or her age, identity, course of study, and if a diploma is offered for certification as to the time, place and circumstance of its conferment. In so doing the censors are empowered to reduce the applicant's statements to the form of an affidavit and administer the usual oath in respect thereto taken by affiants as to the truth of depositions in legal proceedings.

§ 10. Every student before filing the certificate called for by this act shall pay to the secretary of the said state society a fee of five dollars. Every applicant for a censor's certificate that his or her diploma is approved by said society as entitling the holder to registration shall pay to the secretary of said society, at the time of his application, a fee of ten dollars. Every applicant for examination by the censors of said society shall pay to the said secretary, at the time of his application, a fee of thirty dollars. None of these fees shall be returned to the applicant but shall be paid into the treasury of said society. But any applicant for examination before said censors who may have failed to obtain his diploma may for good cause shown be allowed thereafter to present himself for examination without payment of a further fee.

§ 6. Nothing in this act shall be construed to punish any person for performing merely mechanical work upon inert matter in a dental office or laboratory; or a registered student who for purposes of clinical instruction in the presence and under the immediate supervision of his preceptor may assist the latter in dental operation, providing that such student shall not under the pretense of so assisting a preceptor practice dentistry by performing operations independently; or a duly licensed and registered physician and surgeon for his lawful acts in the practice of his profession. Nothing in this act shall be construed to suspend or discontinue any prosecution already commenced under the laws in force prior to the taking effect of this act, and any violation of the provisions of this act forbidding the practice of dentistry without lawful authority, committed by a person who shall have been previously convicted under the laws of which this act is a codification, in any court within this state of the misdemeanor of practicing dentistry without license or registration, shall be deemed a second offense within the meaning of this act; such laws being to that extent kept in force.

§ 7. The following acts are hereby repealed: Chapters three hundred and thirty-one of the laws of eighteen hundred and seventy, five hundred and forty of the laws of eighteen hundred and seventy-nine, three hundred and seventy-six of the laws of eighteen hundred and eighty-one, two hundred and eighty of the laws of eighteen hundred and eighty-eight, and three hundred and thirty-seven of the laws of eighteen hundred and eighty-nine.

§ 8. This act shall take effect immediately.

DISCIPLINE, AND THE WANT OF IT.

No savage lives in harmony with the laws of nature. On the contrary, it is his ignorance of these laws that makes him a savage. And it is only in proportion as man understands his surroundings—understands the laws that govern his existence and uses them to his advantage, and in that proportion only does he become civilized. The superiority of the civilized over the savage is in proportion to the extent to which his thought can grasp the past and the future. By his knowledge of letters he is enabled to record events which otherwise would escape his memory, and thus he augments his experience and frees himself from the inaccuracies of tradition. He realizes that it is not altogether what he sees, but how he sees. The senses, he has learned, are merely the substructure for the superstructure of thought. In uncultured minds the senses are the leaders. In cultivated minds they are lead by the understanding. A weak but disciplined eye can see more accurately than a strong but undisciplined one. It discovers truth from many sides—is never thrown out of focus by chimeras, but receives the impress of objects truthfully; or, if the eye is defective by nature or enfeebled by age, the understanding corrects the error and restores the enfeebled eye to usefulness. When error is known truth is discovered. Follow your senses and they will lead you into a ditch; understand and cultivate them, and they will guide you in the paths of truth.—PATRICK (J. J. R), *Western Dental Journal.*

THE LAW AND THE DOCTORS.

Mr. Frederic Harrison and Mrs. Fawcett have been having a little controversy of their own on the subject of "the emancipation of women." Mr. Harrison is desirous that women should have all possible educational advantages, and he says many fine things about their intellectual and moral powers; but he still holds that their place is in the home, not in the factory, the counting-house, the Government office, or the political meeting. Mrs. Fawcett points out the impossibility of confining women to the home in these days when so many of them have no home, or none that can give them a living; and, apart from that, she resents the idea that women are not adapted to extra-domestic tasks and duties. The controversy is in able hands, and we have no wish to intervene at present. One remark that Mrs. Fawcett makes, however, seems to call for a word. She speaks of "people who are in rebellion against all order in society; who think marriages should be dissolvable at will; that parents ought to have no control over their children," and so on through quite a list of absurdities, the last being the opinion that "any quack or impostor who chooses to put a brass plate on his door calling himself a physician, a lawyer, or what not, should occupy exactly the same position as those who have entered the various professions after complying with the constituted educational test of fitness." Now, we are not acquainted with any persons, nor have we heard of any, who hold this opinion; but we do know of some who consider that if there is anything that tends to bring the capable man and the ignoramus down to a common level, it is the brass door-plate under existing conditions. The public understand now that they have a guarantee that the M D. on a door-plate or diploma means something definite; whereas the fact is that it may cover the widest possible diversity ot attainments and abilities. The present system casts a kind of mysterious sanctity round the very blunders of the authorized physician, so that good wives may be heard talking of them with bated breath almost as if they were treading on holy ground. The doctor, in fact, is treated in general with far more consideration and even reverence than the minister, and, so far as we can see, his science only suffers through the distinction made in his favor. Whatever Mrs. Fawcett may think of it, we are strongly of opinion that medical science will never make the progress it is capable of till it is wholly set free from state control. Instead of such freedom placing the impostor and the competent practitioner on a level, it is the very thing, we are persuaded, that would do most to drive impostors, certified and non-certified, out of the "profession."—EDITORIAL, *Popular Science Monthly.*

ELEMENTS OF SUCCESS IN DENTAL PRACTICE.

BY J. D. PATTERSON, D. D. S., KANSAS CITY, MO.

I care not to discuss the question as to whether "dentistry is a specialty of medicine" or not. I think it matters very little. Let those who wish to quarrel upon that point do so; it matters more to me to know that the dental profession is imbued with a positive knowledge of its great usefulness and aims and with a unanimity and harmony to work and speak as individuals and as societies which will demand the attention of cultivated and progressive people all over the world. The "Elements of success" will never be exemplified in dentistry until the common petty back biting, the quibbling and discussion on trivial pretexts as to our status shall forever be laid aside. Our status will force itself upon the world just so sure as virtue has obtained and maintained its place against vice. An upright, honest man who does his share in the world will finally demand recognition and so will dentistry by virtue of its usefulness as evidenced by its loyal, gentlemanly, cultivated practitioners gain the recognition it deserves—and a better than it has yet obtained—by simple loyalty to standards which all liberal professions must ever demand.

It must be borne in mind by each member of a liberal profession like dentistry that in considering the elements of success, there are ever duties encumbent which are not found when we consider the usual avocations. A member of the dental profession may obtain great success in performing well all that the usual calls in practice demand of him. He may do this so thoroughly that he gathers about him a large and remunerative business, and to the uninformed he appears to fill the full measure of success, even although he neglects entirely his public duty; but he has yet failed because he has left undone the work which is peculiarly distinctive in the liberal professions, viz.: The duty of taking his place with those who unselfishly foster the good of their calling by giving their presence and aid to the efforts of organization by which all professions are maintained and improved. Prominent in this work is the attendance upon the various meetings which are formed for united effort; the duty of publicly contributing to the literature of the profession, of assisting in obtaining laws for the protection of the people against fraud and incompetency; to counsel and assist in all legitimate efforts for dental education. My experience is that we are much too apt to confine ourselves to the interests of the narrow circle of private practice, and if we think of the public interest it is only to criticise the work of those who take active part in that work. I have closely observed dentists all over the country and I am afraid it is only too true that the great majority of them have no sympathy with dental laws, dental colleges and the higher public welfare of their profession. Associations are criticised and attended only for the purpose of obtaining practical points. The literature of the profession is searched for the same purpose, and they who have upon their hands the publication of that literature generally find that the support is grudgingly given and finally falls away entirely. The history of independent dental journalism is a history of failure, the mass of dentists are content to enjoy their private success, which has been brought to them by other hands, without acknowledging their indebtedness to those who have brought their profession to a standard which has been an element of success to them.

All this should be changed and I should be proud to see the Kansas State Society in the front of the improvement. Let me tell you what I think would be a practical way of doing something to promote that end. One thing would be to send to the American Dental Association meeting at Niagara this year the largest delegation of any State in the Union. You can do it. Let every one who hears me make up his mind to make a little sacrifice and work to that end. Give up that shooting or fishing trip, if necessary, and let us show the world of dentistry that western dentists desire by their action to help along the public interest of our profession. Attend this meeting and you will get in touch with the World's Congress in 1893 and aid that great occasion by your presence and contributions.

Another public duty is to give hearty support to your laws regulating dental practice. Some of these laws are almost inoperative on account of the apathy of so many in regard to their enforcement. We cannot doubt that, although these laws are in many cases faulty, yet they have raised the profession in the respect of the people and have been a large element of success to you and to me, and therefore demand from us all encouragement.

Another element of success is to be found in our colleges. Let us for a moment consider where our profession would have been to-day without the elevating factor of dental colleges. While so many are disposed to criticise them, yet an unprejudiced mind must admit that without them dentistry to-day would be largely a mechanical art and its status would be far below what it now is. I cannot understand how any man can say, as I heard one say a few weeks ago, tnat "he believed the colleges had lowered the grade of practical work while it had advanced that of theory." It is not true. Such remarks are made by those who are prejudiced and uninformed. If any one who listens to me believes as this man did let him go to one of our established colleges and see what they are doing and he will be convinced of his error. I conceive it one of the most important things that a dentist should ever be favorably disposed to the college if he at all values the public interest of his profession.

I might enumerate many other points in the field of public interest which devolves upon us as members of our profession because it is a liberal profession, these I have mentioned are to mind among the most prominent, yet there are others perhaps equally important. I have not touched upon the duty we owe in a way of charity to those who are entirely unable to give us recompense. A liberal profession *can not* ignore these claims and we have neglected them too much.—PATTERSON (J. D.), *Western Dental Journal.*

TREATMENT OF TUBERCULOSIS BY ARISTOL.

At a recent meeting of the Therapeutical Society of Paris, Dr. Vogt presented the report of the committee appointed by the society to investigate the method of treatment of tuberculosis by aristol, devised by Dr. Nadaud, of Mentone. The report was favorable to the method. In twenty-three cases of tuberculosis, a cure was effected in seven cases. In these cases the treatment had lasted from twenty-five to thirty days, and the patients were still well although three or four months had elapsed since the treatment was discontinued. In five cases there had been rapid improvement under treatment, but relapse during the month which followed its cessation, requiring a renewal of the treatment, after which they had remained well, a third series of treatments never having been called for. In three cases in which there were large cavities, two had died, one of diphtheria, and the other of tubercular peritonitis. Those of the patients still under treatment were materially improved. By the use of aristol the cough is controlled, expectorations lessened, the night sweats disappear, the appetite returns, the weight is increased, and the general conditions of the body are improved. A one-per-cent solution of the remedy in oil of sweet almonds is the form in which it is used, the solution being injected by means of the hypodermic syringe. It is claimed there is but little local pain, and never inflammation, induration, or abscess at the point of injection. In advanced cases the solution is modified by the addition of five per cent of purified creosote.—*Bacteriological World.*

RACE DETERIORATION.

Four years ago, a committee was formed by the psychological section of the British Medical Association, to make an extended inquiry into the physical and mental condition of school children. The committee has been industriously engaged in their work since its appointment, and have examined over 50,000 school children, of whom 27,000 were boys, and 23,000 girls. From a report recently published, it appears that in this number there were found over 3600 boys, and over 2200 girls, 5800 in all, who presented palpable defects in development. Doubtless there were many more than this, but the method employed permitted the inclusion of only such cases as presented very obvious and visible physical defects. It thus appears that nearly 12 per cent, or approximately one eighth of the entire number of children examined were found to be physically defective; and when it is considered that a large number of these children have not yet reached an age when inherent morbid tendencies or deficiencies would be so obviously apparent as at a later period, it must be conceded that the showing is a bad one.

It was also particularly noted that the larger proportion of defectives was found among the children of the upper classes, from which it would appear that deficiency of food and exposure cannot be held responsible for this frightful downward tendency, but that it must be attributed to some other great underlying cause. Just what this is, has not been pointed out by the committee, and we have no means of knowing whether it has formed a definite opinion upon this point. It may be suggested, however, that the multiplication of luxuries, excesses at the table, and in various other directions, and especially the neglect of physical training or muscular exercise must be held largely responsible for this degenerative tendency.—*Bacteriological World.*

STATISTICS OF ANÆSTHESIA.

E. Gurt, (*Centralblatt für Chirurgie*, n″ 26, p. 81, 1891) gives an account of the results in 22,625 cases in which different anæsthetics were employed. Six deaths from asphyxia occurred, of which all the deaths in 71 occurred in 22,656 cases of anæsthesia by chloroform. Five cases of grave asphyxia occurred in 1,055 cases in which a mixture of either and chloroform was used.—*Exchange.*

BIOLOGY IN THE STUDY OF CHARACTER.

Accepting as true the old metaphysical idea that personality is simply lodged in the individual, and is subject at all times, in case of sanity, to his control and will, the great majority fail to see that biology has any importance in reference to man's character, other than the pathological conditions which it may reveal in cases of insanity; even this is granted reluctantly. If it were true that character is such a special supernatural endowment,—an attribute thus dwelling in man, but not essentially a part of man's organization,—then biology could help us little in the study of man's characteristics. But in the judgment of modern naturalists, at least those who have studied life in the little as well as in the large (microbes and pluri-celluar organisms), there is no room to doubt but that character is rooted in the organic substance, and depends upon it for its existence; it does not come to man as a separate gift at birth, but it grows from the very moment of conception, and is molded largely as the body develops before and after birth. Indeed, we may safely say that character begins before conception, as all-powerful influences are transmitted through the male and female cells uniting to form the first cells of the child's body.

Personality, then, is rooted in the very cells of our tissues, and the proper balancing of these must have a great bearing upon the proper balancing of the character. Morality springs from living tissues, like other integral parts of man's characteristics. Purity and impurity, sobriety and inebriety, rest on certain natural inherited or acquired organic conditions by which the natural appetites remain natural or become depraved, and the power of control remains intact or becomes decreased under exciting causes, such as environment, nutrition, stimulation, etc., etc. Sometimes such exciting causes, stimulated by liquor drinking, for example, contribute to the alteration of the cells, and become thereby a predisposing influence besides.

Biology, then, is a proper means of investigating man's personality, and the diseases thereof. It is a most important factor. In the first place, it establishes the physical relationship of all animals and men. 2. It discloses the influences of nutrition on cell-character. 3. It reveals some characteristics of the most minute individuals, thus supplying means of comparative study of the most hidden activities and properties of different organisms in the animal kingdom.

Biology is the most penetrating, the most discerning of all direct methods of analysis of cell-life. Logical deductions bearing on man's personality can be made from comparative studies and biological revelations, which the uninitiated never dream of.

In disclosing the influence of food on cell-life and activity, biology gives positive evidence that alterations may be produced in the faculties of the cells, and the character of the whole organism that they form, singly or co-operatively. It shows clearly that an organism may be rendered passionate, and that all its natural appetites may be decreased, destroyed, or increased to various degrees of intensity,—even to such perverseness that some of them will appear as purely acquired vices. No more reliable evidence is given of this fact, than by the close study of microbic life.—PAQUIN, (P.) *Bacteriological World.*

PREPARATION OF CAVITIES.

After the removal of softened tissue, the cavity is but seldom suited to the best introduction and retention of a filling. This stage, that of shaping the cavity, may be discussed from two points of view.

1st—The conditions theoretically essential for the best introduction and retention of the filling.

2nd—Modifications of the above involved by

- (*a*) The amount of tissue lost by caries.
- (*b*) Extension of cavity for prevention of recurrence of decay. This includes finishing the edge.
- (*c*) The filling material used.

It is laid down by Tomes that "a cylindrical hole may be regarded as presenting the most advantageous form for the reception of a plug, and the nearer the approximation the greater will be the facility with which the operation of plugging is performed, and the greater also will be the chance of producing a durable plug."

I have the audacity to differ slightly in my opinion from so great an authority, and consider that, theoretically, a cavity with slightly converging walls presents a more suitable shape for the introduction of the filling, though not for its retention ; and in support would urge that in a cavity of this shape the gold can be more thoroughly consolidated, and the convergence of the sides counteracts the tendency of the gold to curl away from the walls, and that force upon the filling only drives it into closer contact with the cavity. This shape, however, is the one least suited to the retention of a filling, therefore it must be modified so as to obtain *sufficient retention* with *as much of the original advantage of introduction* as can be kept.

This will be done by cutting a shallow groove round the sides at right angles to their planes, and as both the filling and the tooth matrix are (*or should be*) of firm resistant materials, this should prove sufficient to effectually answer the purpose.

This, then, is my typical cavity—walls converging inwards, floor slightly hollowed, no sharp angles of junction between sides and floor, and the filling to be retained by transverse grooves in the walls.

Passing to my second point. The modifications of the theoretical best shape involved by practical considerations.

The shapes presented by curious cavities may be readily divided into two—those with four walls and those with three or less. Four-walled cavities may be either shallow saucers, where the disease has penetrated to a slight extent, or their antitheses, inverted cone-shaped holes with their bases towards the pulp, and more or less covered in by overhanging enamel. Neither of these shapes is suitable—in the first, a filling would be difficult to introduce and impossible to retain ; and a solid filling could not be inserted in the second.

Between the two lies safety.

The first is the nearest approach to the typical cavity, only requiring the retaining groove mentioned before. This need not extend all round the cavity, short grooves on two opposite sides being in most cases sufficient. The enamel margin also requires finishing, a point I shall mention further on.

In the latter variety the overhanging enamel will be cut away in the process of gaining access. The sides should be left but slightly diverging inwards, or, if possible, parallel ; the needless sacrifice of much sound tissue would be required to attain the typical cavity. No further provision for retention need be made in this class of cavity.

The second class, cavities with three or less walls, are compound cavities caused by loss of structure, involving more than one surface of a tooth. It includes approximal cavities in bicuspids and molars and approximal cavities in front teeth, involving also the labial or lingual surfaces, and sometimes both.

In this class the strain of mastication tends to force the filling out of the cavity instead of into it, and there being but three walls there is the additional tendency for the filling to escape in the direction of the missing wall. Therefore in shaping cavities of this class, *conveniences of introduction must yield in favor of efficiency of retention.*

In approximal cavities in bicuspids and molars the best form is a double wedge, the base of one being at the cervical margin, and of the other towards the central axis of the tooth. This ensures retention of the filling and prevents its escape towards the masticating surface or away from the tooth.

In front teeth there is not sufficient tissue to enable this double wedge shape to be utilized, but the same end is attained by slightly sloping the floor inwards, and by drilling an opposing point to this base at the apex of the triangle this class of cavity usually presents. Grooves may also be cut in the labial and lingual wall if sufficiently strong. It is not necessary though it is preferable that these grooves should extend the entire length of the walls, nor that they should be deep, but they must be well defined.

The next consideration is the modifications necessitated by the nature of the material used for the filling.

The zinc plastics are unfavorably acted on by the fluids of the mouth. Gutta-percha cannot resist attrition, therefore these are best protected by allowing so far as possible enamel to remain over the mouth of the cavity and so protect them.

I feel a certain amount of trepidation in venturing an opinion on preparing cavities to be filled with amalgam. The apostle of the new departure says in his able monograph on amalgam :—

" All this is lost sight of—the retaining edges, the deep curves, the holding power of properly prepared periphery, make the mind of the amalgam worker easy on the score of plug retention, and he truly bestows as much attention, care and thought upon not removing decay, as the gold worker does on its removal." I would direct your attention, gentlemen, to the concluding phrase of this extract—to carry this argument to its logical conclusion. " Why then should the amalgam worker trouble to remove decay at all ? Why prepare the cavity ? Why not fill over the decay and trust to the preservation and recalcifying power of amalgam "—as Euclid says " Which is absurd." With all due deference to Mr. Flagg, and with the exception of not exposing the pulp, I take it that there can be no advantage in leaving softened tissue in cavities to be filled with amalgam, and trusting to the reputed therapeutical effect of the filling to prevent the inevitable process of decay.

While allowing that in cavities for amalgam it is not so *absolutely* essential to remove all decay as in those for gold, still to obtain the advantage of the holding power of properly prepared periphery before quoted (which I understand to be packing the amalgam beneath overhanging enamel) it is necessary to remove softened tissue from beneath it, which I think is impossible to thoroughly do.

All sharp angles and undercuts being carefully avoided, cavities for amalgam should be left ball shaped to counteract as far as possible the property of this material to assume the spheroidal shape when hardening.

It is not advisable to bevel the enamel margins of cavities for amalgam. This brittleness of this material and enamel being about equal, a feather edge of amalgam is as likely to give way as an unbevelled enamel margin.

Cavities for gold will be shaped on the principles laid down when considering the best shape for the best introduction and retention of the filling.

For cohesive gold I will add that in interstitial cavities in the back teeth especially in bicuspids, that unless the fissure between the cusps is very feebly marked, it is as well to cut it out, thus obtaining additional anchorage for the filling, and removing a very possible cause of subsequent failure.

Cavities to be filled with non-cohesive gold or tin, will almost invariably have four walls. These should have the floors flat and the sides parallel. In levelling the floors of deep cavities, I think filling up depressions with a zinc plastic is preferable to cutting away eminences of sound dentine.

As we have in this material, one, which in teeth of good structure and with proper manipulation is practically a permanent filling, the greatest care should be devoted to any point which will prolong the durability of our work. By the extension of cavities, under which head I include bevelling the enamel margin, we have the means of removing a great factor in the recurrence of decay.

There is considerable difficulty sometimes in preventing this recurrence the cervical margin of approximal cavities in the back teeth being its common seat. It is due to a variety of causes, partly the shape of these teeth which present large surfaces in contact, partly to their use in mastication by which food is crowded in between them and forced down against the gum, where if not removed, it decomposes with the usual results, and perhaps another cause is defective manipulation by the operator.

These cavities, then, should be shaped that only the filling comes in contact with the adjacent tooth, or filling with filling. To this end, having first obtained sufficient separation between the teeth, the cavity should be enlarged towards the cervical margin. If the cavity nearly reach the cervix, it is best to remove the small portion of enamel remaining, as it is likely to flake off, having an extremely vulnerable point. I think in enlarging cavities for this purpose, it is best to err on the right side by cutting away freely if in doubt. When the filling has been inserted and the teeth have returned to their place, they should not be in contact by enamel at any point, and the natural triangle interspace should exist at their necks.

The enamel margin should be finished by being bevelled or chamfered, so that it forms a definite obtuse angle with the surface of the enamel. This removes any half fibres, or whole ones unsupported by dentine ; also it enables the gold to be forced into more perfect apposition with the edge. It is hardly necessary to remind you that the line of cleavage of enamel is supposed to run through the axes of the prisms, and that at the margin of a cavity there will be left half fibres, and probably some whole ones, unsupported by dentine. The lack of organic material renders enamel specially unyielding and unsuitable to resist sudden shocks, unless supported by a more elactic substance. Half fibres, and those supported only by filling material, are likely to split off during or after the insertion of the filling, leaving a crevice for the lodgment of food, debris, etc.

I have already contended that the most perfect consolidation of gold can be obtained in a cup-shaped cavity; but as this shape is the one least suited for the retention of a filling, it is impossible to utilize it for the body of the fillng; but bevelling the margins has practically the same effect as if the sides of the cavity, from the floor to the margins, were continuous divergent straight lines, and thus enables the mouth of the cavity to be filled in the most favorable manner. The bevelled edges should present definite flat surfaces at obtuse angles to the surface of the enamel. They should be planed with sharp chisels, polishing or rounding the edge causes the filling to terminate in a thin, hollowed feather-edge, which is unreliable. By leaving a plain surface the edge results in a strong, angular mass of gold. It is difficult sometimes to properly bevel the cervical margins. I have here an instrument designed by Mr. May for this purpose, which is veiy effective. It is an enamel chisel bent at an angle of about 45°, and the cutting edge at right angles to the axis or the handle, and it cuts by either pushing or pulling, and leaves the margin smooth.

The preparation of cavities for gold would not be complete without some means of retaining the filling, or at least that portion of it first inserted, for our fillings are to be retained by the general shape of the cavities.

Retaining points, or starting points as they are better called, are sometimes necessary; but, as they are painful to the patient, injurious to the tooth, and trying to the operator's patience, it is as well to do without them if possible. The alternative methods hardly come within the scope of this paper; but I may mention—commencing the filling with non-cohesive gold or tin, steadying the first portions of the filling with an instrument held in the left hand until sufficient has been packed to remain firmly, screw-posts fixed into the dentine or root canals, and lastly setting a well condensed cylinder with a zinc plastic.

This paper would not be complete without a reference to matrices. I believe these are of great use for amalgam and non-cohesive gold or tin; but with cohesive gold I have always found—and in this I am confirmed by others—great difficulty in making perfect edges, *not so much at the cervical as at the buccal and palatal margins.* The Jack and Herbst matrices are convenient patterns, and, as a suggestion, I may say I use the ordinary paper fasteners for this purpose. They are thin, soft, and inexpensive, and, if required, can be contoured with pliers like band crowns. The manner of applying them is simple. The edge is hollowed to fit the gum. The fastener is slipped between the teeth and burnished close to the margins of the cavity. A wedge dipped in solution of gum-benzoin or mastic is then forced between the two leaves to keep it in position.

For isolated teeth a belt of platinum foil or thin German silver may be bent up, and the ends soft-soldered together, as recommended by Tomes. These and the strap matrices are very suitable for large cavities to be filled with amalgam.

There still remains to be considered that small class of cavities for glass and porcelain inlays. For these it is necessary that the walls be perpendicular to the floor and no undercuts must be left. In some cases it is of advantage to fill up undercuts temporarily with osteo-plastic, which can be removed when the fitting of the inlay is completed.—MOSELY (E.), *Dental Record.*

KNOWLEDGE OF PATHOLOGY FUNDAMENTAL TO SUCCESSFUL SURGERY.

It will not be amiss if at the opening of the present course, the lecturer prefaces its more technical portion with a few words concerning the present advanced stage of surgical progress, and the causes which have contributed thereto. If we call before our minds the really great surgeons of to-day, or of the present generation, and ask ourselves by virtue of what particular attributes they have become great, we shall satisfy ourselves that they are not only good anatomists, and men of broad general attainments, not only are they all—or nearly all—brilliant operators, but more, much more than this, they are all good physiologists, and especially, good *pathologists.*

Sound and tenable pathology is to-day as essential for the surgeon as for the physician ; one needs it as much as the other. If at this time there is any one respect in which the continental surgeons eclipse those in our country, it is in this. Better anatomists they are not—certainly not better operators—for the most part not so good. But by virtue of their early training and by the influence of tradition and surrounding, they are reared in an atmosphere—so to speak—of pathological interest and lore ; they imbibe it as part of the daily increment of knowledge, and hence they acquire whatever element of superiority they may enjoy over their American *confreres.* It is hardly my business, nor is my purpose here to try to point out the reason for this state of affairs, nor to suggest remedies.

But I can do no greater service to the younger men to whose notice these words may come than by every means and by every argument in my power, impressing and insisting upon their conviction that the early years of their medical studies constitute the golden opportunity for laying in that store of elementary knowledge of normal and morbid physiology, i. e., pathology, and of that familiarity with instruments of research and of technical methods, which shall prove of inestimable advantage to them a little later. How many men whom we could name at once have fallen just short of greatness because of deficiency in this respect! And what a magnificent future lies before succeeding generations of surgeons, if they will but properly prepare themselves for it!

Langenbeck, who well deserved the proud title of Nestor of recent German surgeons, did no greater service for surgery than when he brought to his professional surgical chair the practical knowledge of physiology, which he had acquired by teaching it, and introduced into his akiurgical instruction the experimental method as the two never had been combined before. By this method, as it was practiced by him and his pupils, there was brought almost a second *renaissance* of surgery; while its conspicuous advantages turned the tide of surgical travelers from London and Paris toward Germany, and put German teaching—of this branch of the healing art—so far ahead that even to-day those who would not go to Germany have no need to leave this country for the acquisition of such knowledge. Outside of Germany the same is true in little less noticeable degree. The two London surgeons most honored of all, at home and abroad, are Sir James Paget and Mr. Jonathan Hutchinson; and of the French no man's opinion carries more weight than does that of Verneuil or of Ollier. Yet if I were asked whether these men rank higher as surgeons or as pathologists, I should unhesitatingly say as the latter. And no better illustration of the soundness of my position did America ever afford than was furnished here in your own city by the distinguished Gross. No one at all familiar with his life and work can deny that his greatness and his accuracy as a surgeon were in very large measures due to the attention he paid to pathology during his early years, or indeed all his life. A cursory examination of his early text book on this subject will be convincing in this respect.

Aside from the ordinary knowledge and ability, which, by common consent, every surgeon deserving the name should possess, it seems to me that the culture of the day demands that hereafter none should be deemed competent to practice surgery who has not had competent and abundant training along the lines of

1. Experimental physiology and pathology.
2. Pathological histology and general pathology, including
3. Bacteriology.

It cannot be conidered as improper or too personal if I mention a few individuals among living surgeons, whose work illustrates forcibly the advantage of such training. I know of no one who has more happily combined the dexterity of the accomplished surgeon with the training and education of the expert physiologist than Mr. Victor Horsely. As first an assistant to Prof. Burdon Sanderson, he acquired that familiarity with the endurance of living tissues, and the minute functions of the various organs, which has enabled him to make his operations upon the human patient the marvel and the admiration of contemporary surgeons. So with the leader of the Austrian surgeons, Billroth, and notably with his best known pupils, Czerny, Gussenbauer, Wölfler and others. So too in the highest degree with that great Lyons master of bone-surgery, Ollier, whose volumes bristle with facts attesting his devotion to the experimental method.

Among living surgeon-histologists no names better deserve mention perhaps than those of Paget, of Lannelongue and Butlin. Volkmann led here, as he did in every other department, and, though now he rests from his labors, is entitled to be named with the others who were his contemporaries.

Of surgeon bacteriologists, perhaps the best known are Rosenbach and Fehleisen, though Cheyne and Neisser, with others equally deserving, are scarcely less known. Nor must we forget what home surgeons are doing in these various fields, for such names as those of Parkes, Senn, Halstead and Warren must be written in large letters on this particular tablet of surgical history.

Pathology, then, is a *sine qua non* for the modern surgeon, and everything which fosters fondness for, and familiarity with, it should meet with hearty encouragement. To this end it must assume an ever-increasing importance in every college curriculum, and to this end also every such collection as the invaluable one which this college contains shonld be daily haunted, and no opportunity of securing and preparing specimens for private or public collections should be neglected. Above all things, the many opportunities for study of comparative pathology, both natural and experimental, which are constantly afforded, both in city and country should be utilized to the fullest possible extent.

The most brilliant illustration of what such study may do for one is afforded in the person of Mr. J. Bland Sutton, who stands to-day a young man, yet one of the most prominent figures, in my estimation, among pathologists, living or dead ; who has made thousands of autopsies upon animals, the number including nearly every known genus, who has contributed to the magnificent collection of Royal College of Surgeons some of its most valuable specimens, and who in tastes and acquirements well deserves to be considered the legitimate successor of John Hunter. He, practising and now working as a surgeon, has, nevertheless, almost created the science of comparative pathology ; and it is to be earnestly hoped that he may be induced to undertake a systematic treatise upon this subject —which as yet does not exist in any language. Of the value—surgical and pathological—of his writings, only those can speak who have read them, as all ought to have done. I think he will pardon me if I place his career before you as one deserving alike of greatest praise and closest possible imitation.—PARK (ROSWELL), *Surgical Pathology.*

A NICKEL REMOVING SOLUTION.

In order to remove a coating of nickel which does not adhere well M. P. Dronier, in *La Metallurgie*, recommends that the article should be plunged in an oxidizing liquid composed of bichromate of potash, sulphuric acid and water in the proportions ordinarily used for batteries. The article should then be taken out more or less quickly according to the thickness of the deposit and washed and, if necessary, repolished.—*Eng. and Min. Jour.*

In all operations upon children's teeth, the facility with which certain materials can be employed, even with only temporary benefit, ought to be considered ; and often it is desirable to so treat the teeth as to tide them over a few months, and then repeat the operation, rather than subject a timid child to a long-continued nervous strain. A gentleman, of at least fifty years of age,—a man of iron nerve as well as muscle, a man who had an utter contempt for any kind of nervousness,—came to me one day. He had been a patient of mine for years, and would sit in the chair for hours, and submit to what would ordinarily be painful operations, with apparent indifference. His incisor teeth had worn away, and it seemed advisable to protect them, and also to lengthen the bite. Of course it involved sittings of some length, and he was quite desirous to spend every morning with me until the work would be completed. I told him he ought not to do it, that the strain would be too great. I remember his look of contempt when he said he could stand anything. I told him I thought I knew better, and said to him I would give him two mornings in succession, so as to get a good bearing, and then wait eight or ten days. He thought it was rediculous, but I was immovable. The first sitting I capped two teeth, and then at the next I did two more. The operations were long, but they were not painful, yet he seemed to feel them more than he had in former times. He crawled out of my office without any sort of life or spirit, and he did not want to come near me for two weeks. That was a strong, well man. With children, and young ladies especially, the dentist should see that they do not have longer sittings than are necessary, and then have a sufficient time in which to recover from the strain before the next sitting.—JARVIE (WM.).

A NEW AND PRACTICAL USE FOR ALUMINUM.

This metal with its unlimited uses, seems to be peculiarly adapted for surgical appliances, instruments and artificial limbs; its low specific gravity, together with its great comparative strength, are qualities that are desirable to be combined in an artificial leg or arm, and a very large demand may be predicted for the new aluminum limbs just about to be put upon the market by the enterprising house of A. A. Marks, of New York.

There are amputations of the lower limbs that surgeons deem desirable to make, in order to remove a part or the whole of a diseased or injured foot, without sacrificing more of the member than the parts involved. We refer to amputations, technically termed tibio-tarsal, tarso-metatarsal and medio-tarsal. These amputations have always been in disfavor with artificial limb makers, who have almost to a unit decried their license, and in too many instances have persuaded the surgeons to sacrifice much of a healthy leg merely to obtain a stump that would better accomodate the artificial limbs that they were able to produce.

The new artificial leg, constructed of aluminum, combined with the rubber foot, is adaptable to the above enumerated amputations. The socket of aluminum encases the stump and on account of the strength of the metal, the socket does not increase the diameters of the ankle to an objecionable degree in order to obtain the requisite strength; the metal is cast into the proper shape to give ease and comfort to the wearer; the aluminum socket is terminated by a rubber foot, which not only closely resembles the natural foot, but provides a soft, springy medium to walk upon, and a resistant, phalangeal ball to rise upon while walking, running or ascending stairs.

It is obvious that by this invention the amputation can be conditional upon the injury, and the artificial limb conditional upon the amputation. In this alone the invention of the aluminum and rubber leg will prove not only a boon to the man who has suffered the amputation, but the solution of a problem that has many times perplexed the operating surgeon, as it eliminates all the objections heretofore urged against amputations in the region of the tarsus. The surgeon may thus rejoice in being able to observe the *old* and consistent law of amputating with the least sacrifice.

Aluminum also plays an important part in the construction of strong and durable artificial arms. The socket of an arm being made of that metal, is light and strong and will enable the wearer to subject the artificial arm to severe uses without danger of destruction. It will not crack from overstrain like wood; it will not become soft and limpsey or foul from perspiration like leather; it is lighter than any other metal and is amply strong for every purpose. —*International Journal of Surgery.*

AN ASSERTED METHOD FOR THE SEPARATION OF ALUMINA AND IRON.

According to *Le Genie Civil* Professor Beilstein, of St. Petersburg, has recently discovered a new method of separating alumina and oxide of iron. The mixture is dissolved in nitric acid and the solution evaporated to dryness in a water bath. The residue is heated until all smell of nitric acid disappears and is then placed in boiling water and boiled. Then a few drops of sulphate of ammonia are added and the solution is filtered. The alumina passes through the filter as basic nitrate, but the iron remains behind as an insolnble sub-nitrate.—*Eng. and Min. Jour.*

THE STRUCTURE OF ALLOYS.

At a recent meeting of the Amsterdam Academy of Sciences, says the *Engineer*, Mr. Behrens dealt with the microscopic structure of alloys. Crystallization is a common phenomenon in metals. The least crystalline are pure Al, Cu, Ni, when cast without overheating.

Rapid cooling has no other effect than to make the crystals of smaller size. Pure Ag does not always show crystallization, if properly etched. In alloys crystallization is more easy and perfect than in unalloyed metals. When one grain of Cu, alloyed with 2 mgr. Ag, is melted and slowly cooled, it will be found checkered by minute threads of an alloy rich in silver. All types of structure found in crystalline rocks can be reproduced in alloys. The most common is rectangular wickerwork, less common are isolated clusters of crystals (alloys with few crystals of high melting point, as in Zn + 10 per cent. Pt, Cu + 10 per cent Co). Mechanical stress does not destroy the crystalline structure. A fibrous or lamellar structure is set up, corresponding with planes of sliding or shearing in intercrystalline matter, and under heavy stresses partly due to flattening and stretching of crystals. By annealing, alloys of Cu with Ni can be made to crystallize even as soft iron, thereby becoming even brittle.—*Engineering and Mining Journal.*

AUTOPSIED OR BURIED ALIVE—WHICH?

It is true that the physicians who made the over-hasty autopsy on Mind-Reader Bishop have not yet been convicted of an unlawful act, but they have no particular reason to be proud of such vindication as the jury's disagreement gave them. Previousness in autopsies is something the laity have very little patience with, and previous Mr. Bishop's friends very obviously were, whether any jury finds them unlawfully so or not. A practice analogous to theirs in this case is that of undertakers, who are too apt to push a gallon or two of embalming fluid into bodies from which the breath of life has barely escaped. It is better, to be sure, to be loaded with undertakers' stuff than to be buried alive, but every citizen is entitled to be permanently dead before autopsicians, the embalmers or the grave-diggers have their way with him. We die so seldom that we are in danger of missing some of our mortuary privileges for the lack of practice in asserting them.—*Life.*

I think we cannot be too careful in avoiding lengthy and painful operations for children. I rarely introduce gold fillings, and never very large ones, into the teeth of young children. I refer to the permanent teeth, of course; yet I have seen many temporary teeth filled with gold. Sixth-year molars are sometimes filled with gold soon after eruption, but in such cases they are liable to give out in a short time. They would be much better if filled with some plastic stopping. A lady in my office, one day, for whose child I was then operating, said to me that the child's eldest sister had previously quite a number of teeth filled by an excellent dentist. He did some very heroic work for her, and was anxious to have all the work done in a very limited time. After the operation was over, the child had St. Vitus dance, and was for a long time in a very nervous condition.—FRANCIS (C. E.)

THE

ODONTOGRAPHIC JOURNAL.

CONDUCTED BY J. EDW. LINE, D. D. S.,

39 STATE STREET, ROCHESTER, N. Y.

JULY 15TH, 1892.

UNIVERSITY OF BUFFALO—DENTAL DEPARTMENT ANNOUNCEMENT.

This institution, which will open September 26th, fully equipped for the theoretical and practical instruction of students in dentistry, has the following as its teaching outfit, the honor of first publication of which is with the ODONTOGRAPHIC.

The general staff consists of Drs. H. A. Birdsall, dental materia medica and therapeutics; F. E. Howard, operative dentistry; J. Edw. Line, dental anatomy and histology.* The special staff—Drs. C. E. Francis, operative dentistry for children; C. F. W. Bodecker, dental embryology; F. B. Darby, orthodontia and dental deformities.

The clinical staff—Drs. A. P. Southwick, operative technics; Geo. J. Frey, operative dentistry; H. B. Meade, mechanical dentistry.

The University staff—Drs. Roswell Park, oral surgery and surgical pathology; W. C. Barrett, oral pathology; H. M. Hill, chemistry; John Parmenter, general anatomy; Julius Pohlman, physiology; W. C. Phelps, regional anatomy and demonstrator of dissections.

The adjunct staff—J. W. Putnam, neuralgias and special diseases of the nervous system; E. H. Long, special therapeutics and prescription writing; A. L. Benedict, special diseases of the digestive organs; F. J. Thornbury, bacteriology. Tracy C. Becker, Esq., will lecture on dental jurisprudence.

Prof. Park will deliver a special course of lectures in Oral Surgery, and about twenty lectures in Surgical Pathology.

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*Dental chemistry and metallurgy, prosthetic dentistry, and mechanical technics will be assigned at an early date.

Prof. Barrett will deliver a full course of lectures upon the Principles and Practice of Dentistry, and Dental Pathology.

Other University professors will deliver special courses of lectures for the benefit of the dental students. These will be given during the junior and senior terms.

Dental students will be admitted to the hospitals, and to the bacteriological and biological laboratories, upon the same terms as medical students.

First term students will devote their entire time to laboratory work, and to attendance upon lectures in anatomy, chemistry, physiology, and special pathology, in the University classes.

The laboratory will be opened, and the lectures of the University staff will commence, September 26th, when all first term students should be in attendance. The lectures of the dental staff will commence October 26th.

The board of curators, which comprises the Examining Board of the Dental Society of the State of New York, will act as the censors and advisors of the faculty during the term, and as the final examining board at its close. Besides the State censor, who is a member *ex-officio*, one curator is appointed from each of the eight dental districts of the State.

The board is as follows: Drs. William Carr and A. L. Northrop, first district; William Jarvie and O. E. Hill, second district; E. C. Baxter and C. K. Van Vleck, third district; W. H. Colgrove, fourth district; S. B. Palmer and A. N. Priest, fifth dislrict; A. M. Holmes and E. D. Downs, sixth district; Frank French and F. H. Lee, seventh district; M. B. Straight (in place of A. P. Southwick, censor, who is one of the clinical staff) and Byron Rathbun, eighth district.

BIG MEETINGS.

The Southern Dental Association will meet at Lookout Mountain, the 26th inst, and continue in session several days. After adjournment a goodly number of its members will move to Niagara Falls to attend the A. D. A. meeting.

The American Dental Association will hold its annual meeting at Niagara Falls, August 2d to 5th, inclusive. As this is the last gathering of its members before the great exposition meeting of '93, business will share the time quite generously with the discussion of dental science and art.

The Pennsylvania and New Jersey State societies will hold a joint meeting at Cresson Springs, Pa., July 21–23. And this suggests the query—Why should dental meetings be so arranged as to cut the time from the middle of the week? The committee of arrangements of these societies have hit upon Thursday as the day to begin, and Saturday to end, the meeting. This it strikes us is a good plan, for according to our observation and other men's experience it requires at least one day to get over the terrible mental (?) wear and tear and other ill effects consequent upon attendance at these gatherings, and Sunday above all other days is best suited to the taking of a rest.

The annual meeting of the American Microscopical Society will be held in Rochester, August 9th to 12th, inclusive. In addition to the usual proceedings final action will be taken in regard to the Columbian meeting of '93, and especially the "working session," which is in the hands of Prof. Gage, of Cornell University.

August 17th to 24th, inclusive, the American Association for the Advancement of Science will hold its 41st annual meeting, also in Rochester. Except for the president's address in the case of the last named society, and the reception to the microscopists, the meetings will be held in the Rochester University buildings. The address in question will probably be delivered in Music Hall; the reception will occur at the N. Y. State arsenal.

The annual meeting of New York State society last May proved one of the best in its history. As the year before, so this, outside talent contributed the greater part of the discussion, and discussion of a high order. The credit for the practical working out of this method belongs to President Walker.

The re-election of Dr. Walker gives the society its second third-term president, Dr. Straw having first been thus honored. Dr. Van-Woert, whose chances of advancement another year are as a thousand to one, was made vice-president for the second time. As clerk of the society, Dr. Butler had demonstrated his business qualifications in the keeping of the records and compiling of the proceedings to that degree that he went in for another year without a dissenting vote. Dr. Mirick, who finds money in empty treasuries as readily as some men do in well filled ones, could not be spared, so he was made to draw a prize. Dr. Ottolengui was re-elected as correspondent, as a matter of course. This office and the chairmanship of the committee of practice go together, and by dint of hard work Dr. Ottolengui has made them what they are, most valuable features of the annual meeting.

HONORS!

It is not every day that honors come to dentists, and through them to the dental profession; but this season a few of these special marks of recognition are ours.

In April last the University of Buffalo conferred the honorary "D. D. S." upon Dr. A. P. Southwick, of Buffalo, an "M. D. S." of long standing, and for almost as many years the Eighth district's able representative on the State board of examiners; also the same degree upon Franklin E. Howard, an "M. D. S.," who has held nearly every important position within the gift of the Seventh (of which he waa a member before removing to his present field of professional success) and Eighth district societies. To those who know these gentlemen it is unnecessary to say that the University people did not come within sight even of the possibility of mistake in the conferment of this rare mark of esteem.

Dr. L. P. Bethel, so long associated with Dr. Watt as editor of the *Ohio Journal of Dental Science*, was honored by the Homeopathic Hospital College, of Cleveland, O., with the honorary "M. D." Dr. Bethel appreciates the honor, too, for whereas he appears in the April issue as a "D. D. S." only, the May number announces him as "M. D., D. D. S."

Still later comes the announcement that Dr. R. R. Andrews, of Cambridge, known to every dentist in the land who knows anybody, has had conferred upon him by Dartmouth College the honorary degree of "Master of Arts."

Others there may be, but up to the present the news has not come our way. The list to date, however, is an excellent one.

MALPOSED CYCLERS.

Many members of the dental profession ride the bicycle, and not a few in common with others do the so-called "safety-stoop;" in other words, double up like a half-closed jackknife in the hope of deluding lookers-on into the belief that they are "scorchers." The position is not only ungraceful, but disgraceful and discreditable, bringing as it does the methods and manners of the track into the public highway. The jockey stretches himself along the spinal column of his horse, and the driver of a trotter necessarily spreads his legs, reaches for a grip on the reins, hangs his nose on his horse's tail and sometimes wins, all of which is right and proper in its place—the track. But when either of these functionaries does the horseback or road wagon act off the track, he does so not as a jockey or driver of fast horses, but as a man, and is admired for the manliness with which he does it. He is a thorough believer in the teaching that shopping out of shop is bad business. But the bicycler of "stoop" proclivities seems incapable of making any distinction whatever between the track and the street, between the methods and manners peculiar to each and that distinguish the one from the other. Some of these fellows are "scorchers" without a doubt, but ninety-nine of every hundred of them have just as undoubtedly but recently broken away from a dog circus.

AMERICAN DENTAL ASSOCIATION.

The Thirty-Second Annual Session of the American Dental Association will be held at Niagara Falls, commencing at 10 o'clock, a. m., Tuesday, August 2, 1892.

George H. Cushing, Rec. Secretary.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The Ninth Annual Meeting of the National Association of Dental Faculties will be held at Niagara Falls commencing on Monday August 1st, 1892, at 10 o'clock a. m.

Each delegate must be a member of the faculty of the school he represents, and be provided with the proper credentials.

W. H. Eames,
President.

J. D. Patteson,
Secretary.

PELLETS.

Catching's *Compendium of Practical Dentistry* is still in demand. It should go into the "Handy Volume Series."

Absorbent cotton filters shed broken fibers when introduced dry into the neck of the funnel. To obviate this first dip the mass of cotton into the liquid to be filtered.

In his discussion of the gouty diathesis, at Albany last May, the speaker was more than convinced that "fosid asphate" had nothing to do with it. Strangely enough, everybody agreed with him.

"You are quite certain, Madam, that that cavity had been filled?"

"Quite certain, Doctor, for I met the filling on its way out."

In his preface to "English Pharasees and French Crocodiles,' Max O'Rell says to Jonathan, for whom the book was specially written, "The Old World can teach you something; not how to write, but how to live." True, O'Rell!

Every man, woman and chlld in the United States is interested, directly or indirectly, in good roads, and would like to see a grand road exhibit at Chicago next year. If Col. Pope has his way there'll be just such an exhibit, too.

Through some mixing of things in our make-up of the discussion of Dr. Clapp's paper, the extracts from Drs. Francis, Jarvie and Stockton got away from their proper place. Like the paper itself these were taken from the *International.*

The food exhibition at Madison Square Garden, New York City, October next promises to attract large crowds from all parts of the country. Seidl's orchestra will be one of the many incidentals of the show, but by no means the least.

On page 233 of our January, '92, issue occurs the word "eburnification," for which should be substituted "ebonification." Either is bad enough under any circumstances, but the former is out of all relations with the subject discussed.

"What superb teeth she has!"

"Yes, but they are false."

"Why do you think so?"

"She told my sister she inherited them from her mother."—*Life.*

"The dentist who filled that molar," said a lad just home from college, "must have been off. He said, when I asked him what the material was, 'a preparation;' and when I asked if it was pumice he had used to polish the fillings with, he answered—'That's what it was bought for,'—just as if I cared."

In a recent chat with Dr. W. S. Elliot, a gentleman whose word in dental mechanics is quite close to "law," said that pulp canal drills were very much less likely to break in the root under high speed than when operated with the excessive care shown by most dentists. It's the slow moving drill that catches and breaks; the swiftly revolving one that carries the obstacle before or with it.

Dentine obtundents and other local anæsthetics, with "unqualified endorsements" from those who have been operated upon while under its seductive influence, most of whom, it should be added, wear fringe on their trousers, continue to thrust themselves on the attention of the profession at a dollar or two a bottle. When will the rank and file learn to take the formulæ of men who know something about medicaments and medicating, and compound their own obtunding outfit?

The asinineties of the irresponsible contributors whose vaporings are commented upon by the editor of the *Dental Cosmos* in an article entitled "Amusing Criticisms," suggests the possible ability on their part to write correctly—do it in good literary style, even English,—but it would ruin any man's reputation to venture the assertion that they had ever said anything. Which reminds us of the saying of the wife of a German professor,—"My husband can answer almost any question on any subject, but he has never learned how to make a living." Literary work in a scientific or technical journal is most excellent food for the mental dyspeptic; but when it comes to the nourishing of a live man it answers about as well as bones minus meat. As for the rank and file give them meat; they'll build their own skeletons when life is longer and lazier than at present.

BOOKS, PAMPHLETS, ETC.

DENTAL JURISPRUDENCE, MICROSCOPICAL EXAMINATION OF POTABLE WATER, and other books, will receive due consideration in our next issue.

THE

Odontographic Journal.

VOLUME XIII.—*October, 1892.*—*No. 3.*

DENTAL EROSION AND THE GOUTY DIATHESIS.

All who have studied the subject of erosion admit that there is a mystery which they cannot fathom; and yet there is a general belief that it is the result of an acid condition of the fluids of the mouth, more especially the product of the labial and buccal mucous glands. Granting that this be so, there must be some exciting cause which alters the character of those secretions, making them more than normally acid in their reaction, for the usual tests with litmus paper reveal a slight acid reaction in the mouths of nearly all persons, especially upon arising in the morning; and yet erosion is the exception, and not the rule.

That the exciting cause is a local one, the result of an irritated condition of the glands themselves, I cannot believe. That it is a constitutional derangement of the functions of the larger organs of the body, which so alters the character of the blood-serum, I do believe.

The humoral pathologists, from Hippocrates to Garrod, believed that the cause of gout was to be looked for in the perverted physiological function of the fluids of the body. Most modern pathologists are accepting the uric-acid theory of gout, as promulgated by Murray, Forbes, and Wolloston; while still others believe, with Cullen, that gout is a trophoneurosis. Whatever the cause may be, the manifestations are so protean that there may never be a perfect harmony of belief as to its origin. One fact is well established: that there is in the gouty subject a decidedly acid reaction to all the secretions of the body. Whether this pathological condition is sufficient to produce the changes which we recognize in the oral fluids, I am unable to say. However, that there are remarkable coincidences existing between the two diseases, there can be no doubt. Erosion, like gout, is a disease of advanced civilization. I have never seen it during the period of growth and development, when the processes of nutrition are active, and the consumption of food in excessive quantities is rendered possible by the large demands for the needs of the growing body and for the development of active energy. It is common in adult life, when the processes of nutrition are less active and when growth is complete, and when the supply of food needs to be regulated according to the amount of energy to be developed. Erosion, like gout, is more frequently than otherwise found in the person of those who live in luxury and refinement, and in an atmosphere where an abundant supply of oxygen is wanting. I do not remember to have ever seen a case of erosion in the mouth of one who earned his daily bread by the sweat of his brow. If, then, erosion be a constitutional disease, and in any way associated with the gouty diathesis, none but constitutional treatment will avail. I think it must be admitted that all efforts to arrest its ravages by local measures have resulted in failure. The heroic method of inserting gold fillings upon the eroded surface has done more than anything else to arrest its progress; and yet I feel sure that your own experience has taught you that in some instances this has been ineffectual. The ingenious device of Dr. Kells, of having the patient wear a rubber splint to protect the eroded surfaces from the action of the acid mucus during the night, or when the mouth is in repose, may aid in retarding the disease, but it cannot wholly arrest it.

It would seem that the most logical line of treatment is in the direction of primarily improving the digestion, by the avoidance of such articles of food as experience has demonstrated are incompatible with the gouty dyscrasia. If there is one signal peculiarity in the digestive arrangement of gouty persons, it is their limited power to digest the carbohydrates, the sugars and starches. In whatever form these foods are used, they are more commonly the source of the dyspeptic troubles of sufferers from gout than are the albuminous foods. They provoke the acid and flatulent dyspepsia which so generally precedes the explosion of the gouty paroxysm. Abstinence from all the fermented preparations of alcohol is one of the most important restrictions, on account of the unfermented dextrine and sugar which they contain. Experience has shown that the prohibition of some of the sub-acid fruits—such as, for example.

strawberries, apples, watermelons, and grapes—is attended with beneficial results. Next in order to the saccharine foods as the source of indigestion in gouty persons, come the amylaceous aliments. These constitute necessarily so large an element in ordinary diet that the limitation of them in the dietary of gouty persons applies, in the majority of cases, only to their excessive use. The purely starchy aliments, such as potatoes and the preparations of corn and rice, and even those which contain a considerable portion of gluten, like wheat, oatmeal, and barley, often provoke in gouty subjects a great deal of mischievous and painful indigestion.

"Next in importance to diet as a hygienic regulation in the management of gouty patients, is enforced exercise. The axiom of Abernethy, 'To live on a shilling a day, and earn it,' comprises the philosophy of the true relations of food to work, and both to the highest development of physical health. Exercise is to be enforced, not simply as the means of securing an active respiration, and thereby an abundant supply of oxygen, but also as a means of converting the potential energy of the food consumed into vital energy. The essential condition, moreover, of healthy nutrition in every organ and in every tissue, is the maintenance of a vigorous functional activity. Hence the question of exercise in its largest sense involves not only muscular work, but work of every kind which tends to promote a healthy activity of the psychical as well as the physical functions. Muscular exercise in the open air has a special value for the victims of the gouty dyscrasia, by equalizing the circulation, quickening the respiratory movements, and stimulating the elimination of effete matters from the skin and lungs. But mental work and wholesome diversions are not less important, as antagonizing the evil effects of indolence and over-feeding, which are among the common predisposing causes of acquired gout."—DARBY (PROF. E. T.), *Dental Cosmos.*

BACTERIOLOGICAL WORK MUST BE REVISED.

At the present time, when the relation of micro-organisms to diseases is exciting so much attention, it seems to me that any work done on the subject must help us to understand the part these minute structures play in the animal economy. We must remember that great changes have taken place in the opinions of even the most rabid bacteriologists, when a year or two back one germ was considered to be the virus of typhoid fever. The Hygienic Congress in London last year brought out the fact that about thirteen forms were so intimately associated with this disease that no single one could be accredited with that honor. The same with pneumonia, and now the awful bacillus of tuberculosis, for whose destruction in dry sputum and elsewhere such elaborate arrangements have been advocated, has been proved by a Japanese working in Koch's laboratory to be dead both in sputum and in cavities. This, all who have been working on the subject have known, but could not absolutely prove. In the face of all this, we can hardly take up a medical or scientific paper without finding some allusion to the bacillus of this or that disease. The comma bacillus of cholera is frequently spoken of, although ten distinct forms have been isolated from cholera patients in India and proved to have no casual relation to the disease. Let any one having time and experience take this question up that I have indicated and thoroughly work it out, and I think he would be able to throw a good deal of light on this question of bacterial action.—GIBBES (H.), *Amer. Monthly Micro. Journal.*

SHRINKAGE, AND HOW TO OVERCOME IT.

A careful inspection of old plates when breaking them up, will show it to be the rule, rather than the exception, for the pins to be more or less loose in the rubber; and when section teeth have been used, and set at a distance from the model so as to allow of a considerable thickness of rubber between the teeth and the plate, spaces will be found under the teeth, which, if the plate has been worn for any length of time, will be filled with a magma of putrefying food. This is the cause of the disgusting odor which taints the breath of the wearer of the plate to his annoyance and that of all who have occasion to come near him.

To overcome this defect, enough material must be retained in the mould to insure its being perfectly filled at the conclusion of the vulcanizing process. This may be accomplished by interposing thin slips of metal, (e. g., heavy tin foil), between the two halves of the flask, so that it will not be fully closed. Then, after the plate is about half vulcanized, the flask should be removed from the vulcanizer, the strips of metal removed, and pressure applied to complete the closing of the flask. The rubber will be too hard to yield to the pressure of bolts as usually applied, and it is necessary to use spring pressure, which can be continued after the flask is replaced in the vulcanizer, the rubber being still soft enough at the vulcanizing temperature to flow and accommodate itself to the mould. The second heating must immediately follow the first, as the plaster soon disintegrates and softens and will not then bear the pressure required to re-mould the rubber.

Some judgment is required as to the thickness of the interposed slips, and the amount of spring pressure to be applied. For an upper plate with, say a sixteenth of an inch of rubber between the teeth and model, slips of about the thickness of No. 30 plate will answer; for very light cases, even thinner ones may be used; for heavy lower plates slips as thick as No. 24 may be necessary.

In gating the flask, remove all the surface of the plaster except a very narrow margin immediately around the mould by a cut gradually deepening as it passes outwards. Cut no notches from this channel into the mould itself, as the springs will yield to the pressure of the rubber as it expands, and allow the two halves of the flask to open sufficiently to allow the surplus to escape.

The springs supplied with the flasks of the New Model Whitney Vulcanizer require a force of from 180 to 200 lbs. to fully close them. They are therefore capable of putting a pressure of from 540 to 600 lbs. upon the flask. This amount is not necessary or advisable except when a large surface of rubber is exposed, and if the plate is small the springs should be only partially compressed. As the teeth are sometimes cracked by over-pressure, care should be taken not to bring the coils of the springs into absolute contact, and throw them out of action.

It appears that the expansion of the rubber compound in heating from 212 deg. to the vulcanizing point is about equal to its shrinkage in vulcanizing. It is possible, therefore, to dispense with the interposition of the thin slips between the halves of the flask, by simply relieving all pressure thereupon during the first part of the time of vulcanizing and allowing the flask to open as the rubber expands. Spring pressure must then be applied, after shrinkage is practically completed, to close the flask as before.

The disadvantage of this method is that as the pressure upon the rubber is entirely relieved, it will not flow and obliterate the small imperfections which sometimes occur in packing the mould. If it is to be employed, then the rubber compound must be thoroughly softened, and especial care taken to pack it so that there shall be no faults, employing something of the same degree of care that would be exercised in filling a tooth. Spring pressure is then to be applied to close the flask, it being boiled in a dish of water until its closure is complete. The nuts are then slackened to relieve all pressure upon the spring, and the flask placed in the vulcanizer.—Snow (Geo. B.), *Vulcanizing as applied to Dentistry.*

THE FIRST MOLAR.

If the first molar is extracted before the second molar has erupted, we find the space closing up sooner, and to all appearances there has not been any retrograde movement on the anterior teeth. But upon examination of the bite and jaws, we find a change and a change not entirely at the expense of the jaw posterior to the lesion.

It has been taught in our colleges and journals that we must expect the second molar to occupy the space left vacant, and our natural conclusion has been in harmony with these teachings.

It is contrary to all scientific reasoning to expect such a result where extraction takes place at an age when the jaws are so yielding to the forces brought to bear upon them.

How often do we find a first molar moving forward to occupy the space left vacant after extracting the second bicuspid ?

I have never observed one such instance. Is it not just as lame an argument to advance as that of a second molar moving forward to occupy the first molars space ?

The models I have passed around are casts of my own mouth showing the arrangement of teeth and changes taken place. You will readily see the absence of the first molars in both upper and lower jaws. The upper were extracted at about the tenth or eleventh year, and the lower were left in the jaw until exfoliated, which was completed at the fifteenth or sixteenth year. So the upper were lost before and the latter several years after the eruption of the second molars, bringing about the change presented.

We have in this case a decided shortening of the bite which is shown by the position of the occluding teeth, instead of an interlocking of the canines and bicuspids which was the normal occlusion prior to the extraction, the superior canines and incisors are striking directly upon the incisive surfaces of the eight anterior lower teeth, proving conclusively a determined shortening of the bite. There is also a loss of the use of six bicuspids the four superior and two inferior. I might say here that in all cases the lower jaw is not interfered with to near the extent of the upper after extraction, owing no doubt to the fact that the inferior maxillary bone is ossified earlier in life and is of a stronger mould and texture offering more resistance.

I maintain that the superior maxillary in this case has been shortened to the extent of the width of the missing tooth extracted, not saying anything about the constriction in the width of the jaw.

The second interior molar having erupted earlier than the superior, which is true in the majority of cases, gives it more prestage, having a firmer union with the jaw controlling the movement of its antagonist. The result you observe holding the superior second molar in nearly its normal position, thereby prohibiting an interior movement, but not a rotary movement. The forces brought to bear at this early age upon the superior teeth anterior to the first molar might be regarded as insignificant.

We observe in our every day practice that the protrusions of the superior or inferior canines if let alone, will in the course of a short time be adjusted to the arch and antagonistic teeth. The only force brought to bear is the weight of and contractions of the obicularis oris muscle, with the assistance of the muscles of expression and mastication. If the bones and process is so yielding at the time of the eruption of the canines, why should not the jaw be more so during the eruption of the second molars two years previous?

There is no doubt that if such changes as above mentioned come about at the age of twelve that the jaws have not become fully developed, and adhering to the law governing repair, the destruction is always the greatest in the direction of the least resistance. We have a retrograde movement in every case of early extraction of the sixth year molar. In the superior maxillary the molar eminence adds its marked features to the face, its consequent absorption, its dire effect upon the stronger expression. In every case of early extraction there is an entire loss of this protubearance, and the muscles and surfaces over it become shortened and flattened with constriction of the face in its vicinity. There is a depression at the alæ-nasi, and a sunken condition of the bones which occasionally extends to the floor of the orbit. In the face of all the abnormalities produced we have our journals full of this or that theory relative to the time when this tooth should be extracted. One writer claims the eight year, another the tenth, and another the eleventh or twelfth, and all for what purpose? To bring about a better arrangement and condition of the teeth and for the benefit of humanity in general.

I am safe in making the assertion that nature has not produced as many irregularities as the early extraction of the six year molar has occasioned. Does extracting this tooth at an early age preclude all possibility of an over-crowded condition? Can we foretell the size, development and exact arrangement of the teeth and jaws far into the future? If such prophetic knowledge is possessed by a few, the whole profession should know it. Nature's plan of eruption is a most harmonious one. When the first molar is erupted it acts as an anchor or foundation to the arch, always in the proper place competently adapted for the purpose intended, and in the course of time the second molar erupts, reinforcing as it were, in accordance with the eternal fitness of things.

Now, are we as a scientific profession going to improve upon nature's plan by removing the foundation and dictate our plan of constructing a human jaw? We should have not only one object in view when extracting, giving room for incoming teeth and temporary relief. The best safeguard a dentist can have is to preserve if possible all of the sixth year molars until that condition has come about when the bones of the face have become perfectly developed and features set, the second molars, bicuspids and canines held in position by firm occlusion. Then and not until then do I consider it prudent for the first permanent molar to be removed. Everything is conjecture and visionary when we extract this tooth at an early age with such delusions as some authors advocate, to lead us. Our observation if closely applied will not direct or advise such a procedure. The intelligence of the age demands of us all that our knowledge can avail, and it does not show that we are advancing when we resort to such practice as we have been taught to follow in the past.—Conner (W. B.), *Ohio Journal.*

PROCEEDINGS OF THE AMERICAN SOCIETY OF MICROSCOPISTS.

The meeting of this society for 1891 was held in Washington ten months ago, and at this writing the volume of proceedings is not yet out. The rules require that every paper shall be in the hands of the secretary at the close of the meeting in order to facilitate prompt publication.

Those members who do not know what an immense number of details are involved in the publication will be inclimed to consider such delay as unnecessary. They are mistaken, excepting on the supposition that a secretary is going to drop all his other occupations and do nothing but hurry through such a volume. Even then, half the time is required and much experience.

A publishing house, with many facilities not enjoyed by individuals, and devoting itself energetically to the task, would require several months in which to get out a volume like the proceedings.

The extent to which a secretary must trench upon his personal interests and private enjoyments in order to put through such a volume is far greater than the members realize. It is worth $500 in hard cash to do it, and the secretary ought to be credited by the treasurer with a donation of that sum to its exchequer. Of course he would also enter payment of $500 for the services in order to balance his accounts. But the members should feel that even with the delay they are deeply indebted to the secretary. The present is the second or third volume which Professor Seaman has edited. We beg to submit that at the coming meeting it will be fair to assign to him the highest honor within the gift of the society instead of again entrusting to him this burden which he so willlngly and so patiently bears. And, further, it is suggested that his successor ought either to understand that he will also be honored in due time as a return for his labors, or else a salary of at least $500 should attach to the office. The American Association for the Advancement of Science pays its secretary $1,500 in addition to giving him the services of a clerk the entire year. Let the microscopists make some return for such services and not complain of delays even after having done so.

As to still further enlarging the proceedings and issuing periodical numbers so as to bring out a part only of the papers with more promptness, we shall have little to say. Probably it would be inferred that whatever we might say was due to a dislike for the competition of a new periodical. But before the society decides to set up a microscopical periodical in place of its annual proceedings, it would do well to consider many phases of periodical publishing of which it is now ignorant, and to listen to the views of men who have actually had experience with periodicals in other than microscopical lines, since the same facts and opinions are applicable here.

GUM LANCING AN IMPORTANT THERAPEUTICAL MEASURE.

Clinically, I am absolutely sure that I have seen convulsions, sick stomach, great restlessness, fever, and various other functional disturbances in young children, immediately cured by the use of the gum lancet, after the failure of various other well directed measures for relief. Theoretically, I am in accord with Dr. Kirk, in believing that Dr. Forchheimer absolutely misses the point of the matter, by his failure to understand that the good achieved is not due to the local blood letting or to the relief of the inflammation of the gum, but to the removal of the backward pressure upon an extraordinarily sensitive and, at such times, congested tooth pulp. As was long ago pointed out by Dr. J. W. White, at the period of eruption the roots of the teeth are incomplete. "Instead of the conical termination and minute foramen, which characterize a perfected tooth, the aperture is nearly as large as the tooth itself, and thus when the sensitive pulp, composed of connective tissue, blood vessels, and nerves, is in a condition of irritation because of the morbid activity of the process of dentition—augmented vascular and nervous action—there may be produced a hyperemia sufficient, possibly, to cause the protrusion of a part of the mass from the incomplete aperture of the root, giving abundant cause for extreme constitutional disturbance."

I have myself seen a seemingly incurable epilepsy in an adult permanently cured by the removal of a persistent milk or first dentition tooth. Amaurosis and various other conditions in the adult, are well known to be the result of irritation of the trigeminal nerve by faulty teeth. How much more evil is to be expected from teeth irritation in the child !

In conclusion, I reaffirm that whatever the theory in the matter may be, I am positive that gum lancing is the most important therapeutic measure. It is essential, however, that it should be thorough, and with the object of dividing the dense tissues that bind down the teeth.—Wood (H. C.), *University Medical Magazine.*

A GENERAL SURVEY.

The annual dental gatherings of the past month have developed certain features which, grouped together, are important in their relations to the dental professional work projected for the coming year. If these may be taken as showing the present temper of professional thought, they indicate pretty clearly the trend of the lines along which the greatest activity in dental professional work may be expected to proceed. We have detailed reports of the meetings of the American and Southern Associations, and the State societies of Pennsylvania, New Jersey, and Tennessse. In all of these there has been evinced a marked reaction on the part of the majority of the members against the tendency to discuss problems in ethics, legislation, education, and matters affecting dental polity, largely to the exclusion from these important meetings of a consideration of the more practical technical questions which directly bear upon dental practice. Similarly, the undue prominence, both as to time and place, which has been given to the consideration of topics involving abstract speculation and theorizing along scientific lines only remotely related to dentistry proper, has received its share of criticism from those who represent by far the largest proportion of the dental profession,—those who practice dentistry from the standpoint of the bread-winner.

These diversions have a common origin: the desire to elevate professional standards. It is, however, probably true of the members of the dental profession, as of the community at large, that they are more interested in what a man knows than in what he thinks. Communications, largely speculative in character, in which the author's imagination is the main source of supply for his facts, are becoming deservedly unpopular. More especially is this the case when the topic chosen has only a remote dental bearing. Subjects collateral to dentistry form a legitimate and necessary field for research; but they should not be allowed to encroach upon the study of distinctively dental matters to an extent which threatens the exclusion of the latter from our dental meetings.

There will always exist in the dental profession a modicum of those who are the exponents of the *x*, *y*, *z* end of scientific thonght in its dental bearings, and who will claim that the only road to a high professional standing is in the line which they mark out. We believe, however, that it cannot be successfully gainsaid that professional growth toward a higher standard must be made upon purely dental lines, and that the recognition of that standard by the public will come because we are broadly cultivated as dentists, and not, primarily, because we are proficient in branches of learning outside of, though collateral to, dentistry. It would therefore seem desirable that while giving to advanced scientific thought the prominence to which its legitimate expression is fully entitled, a duly proportionate consideration should be accorded to the technical phase of dentistry, and so give to it the dignity with which a truly scientific treatment would invest it.

Moreover, the fact is not to be lightly ignored that so long as the great mass of the dental profession secure "food and raiment" solely by their dental work, the bulk of their time and energy is necessarily taken up with the problems of daily practice, leaving little or none with which to "consider the lilies of the field." The demand from these is, and will continue to be, for such ideas and methods as they can turn to useful account in their rôle of bread-winners.

Recognizing these facts, the American Dental Association, adopting a suggestion of its president in his annual address, has set on foot a scheme to secure a due proportion of material of the practical character referred to, and so increase the general interest in its meetings, and incidentally of dental meetings throughout the United States. It has appointed a committee to formulate each year a series of practical questions upon important matters in dentistry. These questions are to be sent to all local organizations in the United States, with the request that they be taken up for discussion in sequence at the stated meetings, a report of the discussions to be sent to the secretary of the American Dental Association. Each report, as received by the secretary, will be transmitted to the chairman of the section concerned, who will embody a digest of the matter so collected in his annual report. It can readily be seen that these collated reports, if carefully made, will be an invaluable contribution to dental literature, as embodying a reliable epitome of the views ot the profession of the entire country upon the various subjects.

The list of queries formulated by the committee for the ensuing year will be found [on page 161 of this issue of the ODONTOGRAPHIC.] —EDITORIAL, *Dental Cosmos.*

H_2O_2 FRESHLY MADE.

E. R. Squibb & Sons, Brooklyn, N. Y., "prepare and offer for sale a small wooden box containing the materials for making extemporaneously, as may be required, six portions, each of 473 Cc., or 1 pint, of a pure solution of the strength of ten volumes, with full directions for the preparation and management of the solution whenever and wherever it may be required. These materials do not deteriorate by age or transportation, are not subject to breakage or any danger in transportation or keeping, and although sufficient to yield six bottles, occupy a space less than two, at a cost not greater than six bottles ($3.50).

The materials are entirely complete within themselves (except for two bottles and a funnel), and the directions are so full and complete that any physician, pharmacist, or intelligent nurse should be able to follow them step by step to the result of obtaining a pure solution of a definite ten volume strength, which, if not transported nor agitated much, will keep, uncorked or loosely corked, for many days without material loss of strength." The materials consist of barium dioxide, phosphoric acid, filters, diluted sulphuric acid, and neutral litmus paper.—*Ohio Journal.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The eleventh annual meeting of the National Association of Dental Examiners was held at Niagara Falls, commencing Monday, August 1, 1892.

The sessions were presided over by the vice-president, Dr. Magill, the elected president, Dr. L. D. Shepard, of Boston, explaining his resignation from the State Board of Massachusetts, which necessarily carried with it his resignation of the presidency of the association. The resignation was accepted with regret, and Dr. Shepard was unanimously accorded the privileges of the floor.

Colorado.—George J. Hartung.
Georgia.—D. D. Atkinson.
Iowa.—J. T. Abbott, J. B. Monfort.
Indiana.—S. T. Kirk.
Maryland.—T. S. Waters.
Minnesota.—L. W. Lyon.
Massachusetts.—E. V. McLeod.
New Jersey.—Fred. A. Levy.
Ohio.—Grant Mollyneaux, Grant Mitchell.
Pensylvania.—W. E. Magill, Louis Jack, J. A. Libbey.
Tennessee.—J. Y. Crawford.
Wisconsin.—Edgar Palmer.
Kansas.—A. H. Thompson.

The following boards were admitted to membership:

Virginia.—J Hall Moore.
North Carolina.—V. E. Turner.
Oklahoma.—D. A. Peoples.
South Dakota.—C. W. Sturtevant.
District of Columbia.—Williams Donnally.

At the instance of the committee on colleges, the following communication was sent to the National Association of Dental Faculties:

NIAGARA FALLS, Aug. 1, 1892.

To the National Association of Dental Faculties:

GENTLEMEN,—Whereas, a very considerable abuse has arisen by the improper use by students of the various certificates of the schools. such as the "standing" and "passing" certificates, to support students and graduates under age in their attempt to illegally engage in practice; we therefore ask your association to request the various colleges to have their "standing" and "passing" certificates of such uniformity of terms in each case that they can be used for no other purpose, and that they be printed in few words and small type, and be signed only by the dean.

Respectfully,
National Association of Dental Examiners,
Fred. A. Levy, *Secretary.*

A committee of conference was appointed, consisting of Drs. Truman, Marshall, and Swain, on the part of the Faculties Association, and Donnally, Palmer, and Monfort on the part of tne Examiners Association, which after consultation agreed upon a favorable report.

Dr. Lyon offered the resignation of the Minnesota board, which was laid upon the table, as it had evidently been offered as the result of a misunderstanding, and the board was requested to withdraw it.

The following resolution, offered by Dr. Crawford, was adopted:

Resolved, That when a member of any State board becomes a teacher of a dental school, his resignation from his board should follow.

A resolution protesting against the classification of dentists as manufacturers and the collection of census statistics from them under the provisions of House Bill No. 7696, commonly known as the Wilcox bill, was adopted. The resolution was similar in terms to those adopted by other dental societies.

The committee on colleges reported that they had received reports showing that the actual number of students in attendance at the last sessions in the schools recognized by the Examiners Association was 2881; of graduates, 1357. In the schools not recognized by the association the students were 236; graduates, 96.

The report also considered desirable advances to be made in educational methods, and offered the following memorial, which the secretary was directed to transmit to the National Association of Dental Faculties:

The National Association of Dental Examiners would respectfully memorialize the National Association of Dental Faculties to authorize two advances in the system of dental education.

These are: First, that your association require the universal enforcement of a higher grade of preliminary education of candidates for matriculation. This proposition lies at the foundation of dental education, in which is involved the quality of the graduates of the future, upon which depend the advancement, the standing, and the dignity of the dental profession.

The second proposition is that complete preparation be made in each school for laboratory technique in the studies of histology, pathology, and in each of the departments of dental surgery and dental prosthesis, and that this method of teaching be made a requirement of the schools.

The committee also reported the following amended list of colleges which they recommend as reputable:

Baltimore College of Dental Surgery, Baltimore, Md.
Boston Dental College, Boston, Mass.
Chicago College of Dental Surgery, Chicago, Ill.
College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.
Dental Department, Columbian University, Washington, D. C.
Dental Department, National University, Washington, D. C.
Northwestern University Dental School.
Formerly Dental Department of Northwestern University [University Dental College].
Dental Department of Southern Medical College, Atlanta, Ga.
Dental Department of University of Tennessee, Nashville, Tenn.
Harvard University, Dental Department, Cambridge, Mass.
Indiana Dental College, Indianapolis, Ind
Kansas City Dental College, Kansas City, Mo.
Louisville College of Dentistry, Louisville, Ky.
Missouri Dental College, St. Louis. Mo.
New York College of Dentistry, New York City.
Northwestern College of Dental Surgery, Chicago, Ill.
Ohio College of Dental Surgery, Cincinnati, O.
Pennsylvania College of Dental Surgery, Philadelphia, Pa.
Philadelphia Dental College, Philadelphia, Pa.
School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.
University of California, Dental Department, San Francisco, Cal.
University of Iowa, Dental Department, Iowa City, Ia.
University of Maryland, Dental Department, Baltimore, Md.
University of Michigan, Dental Department, Ann Arbor, Mich.
University of Pennsylvania, Dental Department, Philadelphia, Pa.
Vanderbilt University, Dental Department, Nashville, Tenn.
Western Dental College, Kansas City, Mo.
Minnesota Hospital College, Dental Department, Minneapolis, Minn. (defunct).
St. Paul Medical College, Dental Department, St. Paul, Minn. (defunct).
American College of Dental Surgery, Chicago, Ill.

The report was adopted.

The following officers were elected for the ensuing year: W. E. Magill, Erie, Pa., president; J. Y. Crawford, Nashville, Tenn., vice-president; Fred. A. Levy, Orange, N. J., secretary and treasurer.

Adjourned.

HONORARY DEGREES AGAIN.

The action of the National Association of Dental Faculties in passing a vote of censure on the Baltimore College of Dental Surgery for conferring the degree D. D. S. honorarily without consent, emphasizes the purpose of the association to hedge about the awarding of such honoraria with all the safeguards possible. In this purpose it will have the hearty support of the profession at large. The rule of the Faculties Association is a sound one, and seems to cover broadly all likely necessities. It reads:

> "*Resolved*, That the degree of Doctor of Dental Surgery shall not be conferred by any college belonging to this association honorarily, except by the consent of this association."

The tendency to limit the conferring of honorary degrees is in accord with popular sentiment and good policy. While it is a debatable question whether a hard and fast line can be drawn, it might be well to define as nearly as possible under what circumstances and within what limitations cases for the reception of the honor can be considered. Undoubtedly cases must arise where distinguished services to the profession are deserving of some such reward, and the occurrence of a case calling for the interference of the association indicates that specific legislation should be had.—EDITORIAL, *Dental Cosmos.*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The ninth annual meeting of the National Association of Dental Faculties was held at the Cataract House, Niagara Falls, commencing Monday, August 1, 1892.

Twenty-six colleges were represented, as follows :

Baltimore College of Dental Surgery—R. B. Winder.
Boston Dental College—J. A. Follett.
Chicago College of Dental Surgery—Truman W. Brophy.
Harvard University, Dental Department—Thomas Fillebrown.
Kansas City Dental College—J. D. Patterson.
Missouri Dental College, Dental Department of Washington University—W. H. Eames.
New York College of Dentistry—Frank Abbott.
Ohio College of Dental Surgery.—H. A. Smith.
Pennsylvania College of Dental Surgery—C. N. Peirce.
Philadelphia Dental College—J. E. Garretson.
University of Iowa, Dental Department—A. O. Hunt.
University of Michigan, Dental Department—J. Taft.
University of Pennsylvania, Dental Department—James Truman.
Vanderbilt University, Dental Department—W. H. Morgan.
Northwestern College of Dental Surgery—B. J. Roberts.
Louisville College of Dentistry—Francis Peabody.
Indiana Dental Journal—J. E. Cravens.
Northwestern University Dental School—E. D. Swain.
Dental Department of Southern Medical College—William Crenehaw.
Dental Department of University of Tennessee—J. P. Gray.

School of Dentistry of Meharry Medical Department of Central Tennessee College—G. W. Hubbard.

University of Maryland, Dental Department—John C. Uhler.

Columbian University, Dental Department—H. C. Thompson.

Royal College of Dental Surgeons of Ontario—J. Branston Willmott.

American College of Dental Surgery—John S. Marshall.

University of Denver, Dental Department—George J. Hartung.

The *ad interim* committee reported that it had investigated a charge preferred against the University of Maryland, Dental Department, by the College of Dentistry of the University of California, of graduating a person in less time than the rules demanded ; that it found that no rule of the association had been violated, and had so reported to the parties in interest ; that it had dismissed an effort for the reinstatement of the American College of Dental Surgery, Chicago, as not within the jurisdiction of the committee, with the advice to reorganize the college before attempting to influence the association to change its action, which reorganization has since been accomplished.

The committee also stated that its value in settling such matters had been made so clearly apparent that it recommended that it should be made a standing committee, to be elected by the association, instead of being appointed by the president.

The report was received and placed on file, and the recommendation with regard to the status of the committee was adopted.

The following resolutions, laid over from last year, were adopted:

Resolved, That in case of charges against any college no final action shall be taken until all parties concerned shall have had at least thirty days' notice.

Resolved, That at all future meetings of the National Association of Dental Faculties the delegates shall consist of members of faculties, and demonstrators will not be received.

The following resolutions, also over from last year, were laid on the table :

Resolved, That after June, 1893, the yearly course of study shall be not less than seven months, two months of which may be attendance upon clinical instruction in the infirmary of the school, now known as intermediate or infirmary courses.

Resolved, That after the session of 1892-93, four years in the study of dentistry will be required before graduation.

The following resolutions lie over under the rules :

Offered by Dr. Winder,—

Resolved, That hereafter graduates of pharmacy be placed on the same footing as graduates of medicine, and be entitled to enter the second-year or junior class, subject to the examination requirments of each college.

Offered by the executive committee,—

Any college failing to have a representative present for two successive sessions without satisfactory explaination shall be dropped from the roll of membership of this association.

The chair, having been asked for a ruling upon the admission of graduates of pharmacy to the junior ciass, decided that under the rules they could only be admitted to the first-year or freshman class.

The executive committee offered a report recommending the restoration of the American College of Dental Surgery to full membeaship, which, an explaination by Dr. Marshall of the reorganization of the college, was unanimously adopted.

The executive committee reported on the application of the Western Dental College, of Kansas City, recommending that it lie over for one year. The report was adopted.

The report of the executive committee recommending the rejection of the application of the Tennessee Medical College, Dental Department, of Knoxville, Tenn., for irregularities in conferring the degree of D. D. S. and in the reception of students, was adopted.

The application of Howard University, Dental Department, Washington, D. C., was laid over for one year.

The following applications for membership, also reported by the executive committee, lie over under the rules :

United States Dental College, Chicago.
Homœopathic Hospital College, Dental Department, Cleveland.
Detroit College of Medicine, Department of Dental Surgery.

The report of the executive committee recommending that the Baltimore College of Dental Surgery be censured by the association for conferring the degree of Doctor of Dental Surgery upon Charles F. Forsham, M. A., L. L. D., of Bradford, England, *in absentia* and honorarily, in violation of the rules of the association, was adopted.

Dr. Truman offered an amendment to the rule regarding the conferring of the degree of Doctor of Dental Surgery, honorarily, absolutely prohibiting the exercise of that privilege to the members of the association, but the amendment was lost, after discussion, it being the general sense that the present rule is a sufficient safeguard against the unworthy bestowal of the honor.

Dr. Cravens offered the following amendment to the constitution, which goes over under the rules :

Amend Article VII. so that it shall read as follows :

Art. VII. Any reputable dental college, located in any State of the United States, may be represented in this body upon submitting to the executive committee satisfactory credentials, signing the constitution, conforming to the rules and regulations of this body, and paying such assessments as may be made.

The association adopted a protest against the classification of dentists as manufacturers, as provided in House Bill No. 7696, known as the Wilcox bill, and against the collection of statistics from dentists under its provisions, on the grounds that dentists are not manufacturers in any sense, not being engaged in the manufacture, fabrication, or sale of any products having a merchandisable value ; that all the laws heretofore passed in the various States and Territories and the District of Columbia distinctly recognize dentists as professional men ; and that the attempt to collect statistics would be an injustice not only to them but to their patients, and that such statistics if collected would be valueless to the government because showing the products of a class of men not engaged in manufactures.

The following, offered by Dr. Winder, was also apoted :

Resolved, That the National Association of Dental Faculties recommends that their alumni write and demand of the Census Bureau of the United States the return of all statistical reports, as under the recent agreement between the dental profession and said Bureau, lawyers, physicians, and dentists are exempted from making statistical reports for the census of 1890 ; and that a copy of this resolution be forwarded to the chief of the Census Bureau.

A communication from the Post-Graduate Dental Association of the United States, suggesting the establishment by the colleges of short courses of training and teaching especially designed and arranged for practitioners, was received and referred to the executive committee.

The manuscript of a Compend of Materia Medica and Pharmacy for Dental Students, by Dr. E. L. Clifford, of Chicago, was referred to the committee on text-books, with power to act.

Dr. Marshall offered the following resolution, which was adopted:

Resolved, That the secretary be instructed to notify the National Association of Dental Examiners that the National Association of Dental Faculties considers it out of its province to legislate upon the relative values of the L. D. S. and D. D. S. degrees.

The following were elected officers for the ensuing year : J. D. Patterson, Kansas City, president ; H. A. Smith, Cincinnati, vice-president ; J. E. Cravens, Indianapolis, secretary ; H. A. Smith, Cincinnati, treasurer ; F. Abbott of New York, J. Taft of Cincinnati, and A. O. Hunt of Iowa City, executive committee ; James Truman of Philadelphia, Frank Abbott of New York, and Thomas Fillebrown of Boston, *ad interim* committee.

The president appointed as the committee on schools Drs. J. A. Follett, Boston ; S. H. Guilford, Philadelphia ; E. D. Swain, Chicago ; C. N. Peirce, Philadelphia ; T. W. Brophy, Chicago.

Adjourned to meet at the call of the executive committee.

WORK FOR MINOR ORGANIZATIONS.

Briefly, the suggestion is that a few questions, carefully chosen as to importance and suggestiveness, be formulated by this body, and that every state and local organization be requested to take up one or more of these as a regular order of business at each stated meeting, an accurate report of the discussion to be forwarded to the secretary of the American Dental Association, to be by him transmitted to the chairman of the proper section, who shall collate the data so secured, and make a careful digest of the same as the basis of his report at the annual meeting. Organizations furnishing reports should send their quota of delegates to represent them in this body when the matter comes up for discussion. This plan is not intended to do away with the present work of the sections in securing valuable original essays and the results of scientific research, but is suggested as an additional means of increasing the usefulness and strength of the association, by securing, first, a more intimate relation and community of interest between the American Dental Association on the one hand, and the State and local organizations on the other; second, the co-operative organization of the entire working force of the dental profession in America; third, the necessary material for the active development of the section work of the association, placing the sections upon a firm basis, so that each will become a sub-organization engaged in special work under the government of the general body, which will then become a truly representative federation of active societies of specialists. Its work will thus be in harmony with the dignity of a national body, and members in attendance can devote their time and attention to the lines along which they have the greatest interest.

To carry out these purposes a standing committee is recommended, to be known as the Committee on State and Local Organizations, to have full charge of all matters which properly fall within its jurisdiction as before indicated.

The president appointed the Committee on State and Local Organizations as follows: Edward C. Kirk, Philadelphia, chairman; J. N. Crouse, Chicago; and Louis Jack. Philadelphia.

The committee subsequently reported the following set of questions, which they recommended for discussion among the State and local societies during the coming year, in accordance with the plan before described:

No. 1. Should examining boards have power to grant certificates of qualification to undergraduates?

No. 2. Should immediate root-filling be practiced while purulent conditions exist at the apex?

No. 3. What are the best materials to enter into the composition of temporary fillings, to be retained for a minimum of three years?

No. 4. What are the best methods for obtunding sensibility of the dentine by either local or general means? Should arsenic ever be used?

No. 5. What are the best forms of partial lower dentures and the methods for constructing the same?

No. 6. Corrective dentistry: its present status: what are the simplest and most universally applicable forms of apparatus and most efficient retaining fixtures?

No. 7. To what extent and under what conditions is the collar crown a cause of pericemental inflammation?

No. 8. In cases of congested pulp, should the arsenical application be made without preliminary treatment?

No. 9. What are the advantages and disadvantages of the use of the matrix (*a*) with gold, (*b*) with plastics?

No. 10. The etiology of pus-formation.—*Dental Census.*

COPPER AMALGAM—DISCRIMINATION IN ITS USE NECESSARY TO SUCCESS.

I do not know exactly what relations the different metals bear to each other in the state called fusion, whether the minute infinitesimal particles of each metal remain intact and distinct from each other; but, whatever fusion is, I think that the same condition exists in an amalgam. There may be particles of free copper in copper amalgam, and in the coarser grades I think there are; but their surfaces must be covered with an alloy composed of copper and mercury fused into each other. It is reasonable to suppose this coating of alloy has a perceptible depth, and the finer those particles are the more complete the fusion, and if we follow it up we can imagine a state of affairs when this fusion goes clean through the minute particles of copper, and then there would be no free copper contained in the mass. We can cover a piece of copper completely with mercury by rubbing it in; so, by grinding copper amalgam and breaking up the minute particles of copper and rubbing in the mercury upon them we get more complete fusion. But, better still, if the copper, in the first place, be precipitated in as fine a state as possible upon the mercury, we have a more thorough fusion still, for we know that copper precipitate, in a nascent state, amalgamates or fuses with mercury.

The precipitate from a strong solution of a cupric salt is coarser grained than from a weak solution. If the solution was diluted with an equal bulk of water, the precipitate would be twice as fine ; the weaker the solution the finer the precipitate, and the more complete the fusion between the copper and the mercury, in short, the more thorough the amalgamation. I agree with Dr. Ames and Dr. Custer that the copper amalgam must be thoroughly amalgamated and of fine grain to give the best results. I go further and repeat what I have always maintained, that it must be thoroughly clean and free from all kinds of impurities, especially oxide of copper or mercury or any other metal. If we overheat it or allow it to become wet or damp while mixing, it becomes more or less oxidized and therefore unclean I attribute the discoloration of tooth substance by copper amalgam fillings to impurities in the material.

I received a letter not long ago from a prominent American dentist asking me what was my theory concerning the wasting of copper amalgam fillings. He says, "we know copper amalgam will save teeth ; now, we want to know what will save the filling." I was obliged to confess I had no theory to advance. But I have been experimenting with the material for a number of years. I have made a great many experiments both in the mouth and out of it, and have kept a record of fillings put in and notes of the various methods employed and peculiarities observed. The results of my observations, I fear, do not amount to a great deal. They have certainly not led to the adoption of a theory. But I have learned to avoid many things which invite failure, and to recognize indications which promise success. I have noticed that failures are more likely to occur in some localities than in others, for instance : copper amalgam fillings placed in approximal cavities extending over the grinding surface of molars and bicuspids, are more apt to fail than all others. Large crown and contour fillings in molars come next. These fail from the wasting or cupping described before. Buccal fillings very rarely fail unless they extend to the grinding surface, when "cupping" generally takes place. Small crown and fissure fillings seldom fail, and approximal fillings, anterior and posterior, which do not reach the grinding surface, are almost invariably successful. The most permanent and successful I find are fillings in those shallow groove-like cavities on the palato-cervical and linguo-cervical surfaces of molars and biscupids, and sometimes of canines and incisors.

In my own practice I have very few failures, and I dare say it is because I use copper amalgam very cautiously. I never employ it where other amalgams would do as well, nor where experience teaches me it was likely to fail. I have never considered it to be a substitute for other materials, but rather a material to use where I knew anything else would fail. I have not begun to have the number of failures in my work that other dentists report in theirs, and I have seen more failures in fillings made by other dentists than in my own, but I think that is because they use it too indiscriminately. In fact some have told me they have used it altogether to the exclusion of every other kind, and I have no doubt it is due to this fact that it has proved so disastrous in many hands. Dr. Trueman says that he "considers copper amalgam judiciously used, a valuable addition to our list of tooth-saving materials. It does not, however, supplant the alloy amalgams." He is disposed to think "that in the long run, those who use it most cautiously will appreciate it most highly."

I have never seen recurrence of decay around a copper amalgam filling, except in those small shallow buccal cavities in molars and bicuspids at the margin of the gum, where we find a disintergation and softening of enamel. I think the fault in these cases lies in not cutting enough of the enamel away in the first place. I would not blame the amalgam, as another material would have done no better—certainly not an alloy amalgam. It is in those very same shallow buccal cavities where the use of copper amalgam is specially indicated, just there where it exhibits, in strong contrast to other amalgams, its peculiar unshrinking qualities. Even the small amount which good alloy amalgams shrink would be quite sufficient to cause it to "drop out."

Of course, in speaking of failures, one would not include those cases where recurrence of decay was caused by the accidental fracture of the tooth at the margin of the cavity. My experience has been that there is less liability of marginal fractures where copper amalgam is employed than where we use an alloy amalgam, and I account for it in this way: There being no shrinkage with copper amalgam, the enamel is better supported, and consequently not so apt to break. With some alloys we know there is considerable shrinkage, and a space is left under a thin portion of enamel inviting fracture sooner or later.

In mixing copper amalgam or preparing it for the cavity, if it is too soft it will result in disintegration and softening of the filling. Neither must it be used hard and dry. See that it works with a smooth plastic finish under the burnisher. If it is dry and granular under a burnisher, it will result in failure. It is not difficult to determine the proper plasticity to give best results, as when it works smoothest and easiest is when it is right; and when it is properly mixed it certainly is a very pleasant material to work.

Do not insert the copper amalgam after it has begun to set, for your filling will fail. After it has begun to set it should not be reheated until thoroughly hard.

Dr. Ames argues that we heat and triturate it too much. Dr. Barnes and Dr. Osmun contend that we do not heat and grind it enough. It is my opinion we heat it too much and triturate it too little. When I say heat it too much, I do not mean too often, but with too high a temperture. Copper amalgam should be heated slowly over a small flame, care being taken not to raise the temperature too high. If care is taken, it does not matter how often we heat it and allow it to get hard again ; the oftener the better ; but I think that part of it is the manufacturer's business to attend to.

I would like to say a word in reference to mortars. It is important to have a good one. Some of the small porcelain mortars to be found at the depots are worse than useless—smooth inside, with a pestel also smooth and too small to grasp. Some of the larger glass and wedgewood mortars are better, but some of the pestles are too large. The mortar I have found to give the best satisfaction is a ground glass mortar and pestle made by Fletcher of England.—WEAGANT (GEO. H.), *Dominion Dental Journal.*

THE SOUNDS OF THE SIMIAN.

It seems not unlikely that, within a few years, our knowledge of animals will be further increased by an analysis of the sounds by which they make their wants or feelings known to one another. The subject has always been one of so much interest that it is not surprising that so soon after the phonograph has been perfected it should have been used for the purpose of studying and comparing the utterances of various animals. Houzeau counted a dozen distinct sounds in the common hen which he believed were understood by other hens.

An American naturalist, Garner, has taken up the study of the language of monkeys, and one of our engravings, from *La Nature*, represents him experimenting with a monkey which is listening to a phonograph that has registered the sounds of other monkeys. The animal appeared to be very much astonished at hearing the sounds without seeing his companions, and tried to get its hand into the instrument.

It will be interesting to know how far an animal can particularize, that is, can a monkey say a field of *bananas*, or can it only express the idea of something to eat, whether bananas or coäcoanuts ?

Garner thinks he knows eight words of the Simian language, or rather Capucinese, since the animals from which he learned them were Capucin monkeys.

Pronouncing the word which he understood to mean milk to a monkey the animal turned its head and looked at him ; repeating the word three or four times, the monkey responded by the same word. When Garner again spoke the word the animal took up the pan from which it was accostomed to drink and held it out to him. When in Cincinnati Garner used this same word to a Capucin monkey which also repeated the word several times and ended by placing its drinking vessel in front of the naturalist and repeating the word. When water was poured into the vessel the monkey repeated the word again and drank it. It would thus appear that the word meant either milk or water, or anything to drink.

On another occasion the naturalist told his friends that a certain word meant food. He then, without saying anything, placed a banana before a monkey which at once repeated the word of which he had spoken.

A study of the derivation of the different dialects of the Simian language would be interesting ; doubtless, most of the words are onomatopoetic, that is, formed from the sound, as the English babble, but this is by no means certain. It is possible, also, that the gestures of monkeys have special meanings, according to the word, or words which accompany them.—*Medical Abstract.*

RIGGS' TREATMENT WHEN, WHERE AND UPON WHOM FIRST EMPLOYED—ADVERTISING.

There is no disguising the real fact that the true animus against advertising has come from the " Cheap John " style, which has been quackish. By this we mean, offering to practice certain methods which bore on the face of them base evidence of fraud, and were calculated to deceive the public. It is a fact now, and was more so when P. T. Barnum announced that the public did seek "Humbugism." We all know that our field of operation admits of as much opportunity as any for such practices—by the unprincipled. The first decided public venture in advertising in dentistry that comes within our memory was in the noted Gleason's Pictorial, which during the period of 1840 to '50, was very popular as a family paper. It was one of the most popular ventures, as the old New Englander said, "as a picter paper." In this journal was illustrated very largely and lavishly and yet interestingly, carrying with it a good deal of intelligence, the practice of dentistry—as it was understood in those days, principally mechanical. The proprietor of this advertisement was Dr. Hitchcock of Boston, a fine, aristocratic gentleman, genial, cultivated and a man of merit. These articles would interest many to-day as a matter of reference. Emphatically joined to the illustrative was the practical thought he had in mind, the securing of a large practice, which he did gain and with it financial success. In his advertisement, as plain as printer's ink could make it, he did bid for the public, offering terms favorable to the clergy and to any of limited m ans. The doctor strongly guarded his surroundings with everything that pleased the cultured and the curious eye of the public in his finely furnished apartments. The best evidence of success was his apparent success. This was before the dictation of arbitrary associations. Dr. Hitchcock was the father of Prof. Thos. Hitchcock in the initial school of dentistry in Harvard. We readily recall the senior Hitchcock's genial bearing, fine-looking face, and as handsome a set of teeth as we see in any mouth. Yet he was caught by the destructive malady, "Riggs' Disease."

With a little detour we will intertwine with this letter a little history. In the August of 1864, the American Dental Asaociation met in Boston. Standing on the State House steps during the session were a few dentists, and among them were the late Drs. Riggs and Hitchcock, a few others whom I do not recall. Dr. Riggs, by way of conversation, described certain conditions of disorder, which he had been long observing associa ed with the teeth. He turns to Dr. Hitchcock and says: "What do you do with such cases?" He replies, "I am not able to do anything with them; I do not try." "Further," he says, "I am loosing my own teeth, one by one, from the same disordered condition which you have described, and greatly to my consternation." Dr. Riggs, after taking a casual view of the doctor's teeth, which readily exhibited their condition, says, "Here's an excellent chance to practice what I preach, not so much in public as yet." This led to an invitation to visit Dr. Hitchcock's office at once, and a little nucleus of dentists followed on, saying in side talk, now for something new. Dr. Hitchcock tells Dr. Riggs to look over his case, anything he wished was at his command. The doctor says quaintly, with one of his inimical laughs, "I don't expect to find anything; I have a novel instrument of my own, although not with me. Show me your laboratory with a forge and I will produce a pair of instruments with which I treat this disorder. Within an hour the instruments were produced and the operation commenced. This was the first public clinic of what is now known popularly as the "Riggs' Treatment." While it was the cause of much interest to those who witnessed it, there was little response to those who repeated what they had seen. Well, this was an advertisement of another class. The next that was heard from this subject was at a meeting of the Connecticut Valley Dental Association. Notice what follows. A set of instruments were exhibited by a Boston dentist as *original*, which were *fac similes* of those Dr. Riggs had manufactured and used at Dr. Hitchcock's office, (he leaving those instruments there.) This will be seen as another class of advertising. This event was the means of arousing an interest in the real virtue of the subject. It became the occasion of advertising Dr. Riggs and his treatment in a way that could have hardly been predicted. From that time Dr. Riggs' fame has increased, and I do not say anything marvelous when I say that his name will be remembered as long as any man that has yet been identified with the profession of dentistry.—*New York Letter to Dental Review.*

DISCUSSION OF "TOBACCO AND ITS EFFECTS."

Dr. Swain: I desire to congratulate the essayist on giving us so good a paper upon this subject. I went to the books for ideas with which to open the discussion, but I found them very meager indeed; there was very little said about it, and most of that was that years ago it was considered to possess great medicinal virtues, but of late years the use of tobacco as a medicine had been largely discarded. I believe its curative virtue, if it has a good property, is that it is a sedative. The long continued use of tobacco is unquestionably, however, a nervous irritant, and any person who has used it for many years, either as a chewer or smoker, will, I think, concur in the statement that it becomes an irritant rather than a sedative. I question very much the statement that the excessive use of tobacco will help one mentally or physically. We have all observed in those people who have used tobacco for a number of years the conditions explained by the essayist, namely, the receding of the gums and the softening of the tooth about its neck. I can speak on this subject somewhat from experience ; I used tobacco myself from childhood up to a little more than a year ago. I have chewed and I have smoked, and I am satisfied that my teeth were injured from the use of tobacco, not only in chewing from the grit which it contained causing mechanical abrasion, but in that peculiar condition which it produces of congesting the mucous surfaces which results in a disorder of the subcutaneous glands causing them to give off a diseased secretion which destroys the tooth. I don't know that I have ever observed any bad effects of nicotin or the product of combustion of smoking, on the enamel of the teeth other than to stain it ; tobacco colors the teeth yellow, but the other conditions I have not noted during my experience as a practitioner of dentistry. The worst results from the use of tobacco come from the smoking of cigarettes. The combustion of the paper, especially the cheaper qualities of paper, I consider very deleterious. Just what the products are I cannot say, but the condition of the mucous membrane of the mouths in those people who are confirmed cigarette smokers gives us all the evidence that is necessary that it is very injurious.

Dr. Gilmer : My experience leads me to the belief that tobacco tends to prevent decay of the teeth. I recall a number of instances where patients have left off for a time the use of tobacco, and in these cases almost invaribly has there been a marked increase in the tendency to decay. So frequently have I observed this that I cannot but conclude that tobbaco must have a preservative effect. If this condition were only found in the mouth of former chewers we might question whether the increase in decay did arise from the lack of friction offered by the chewing process rather than by virtue contained in tobacco, but I have seen similar results following the discontinuance of smoking but not so marked.

Dr. Harlan : I do not rise for the purpose of defending the use of tobacco, but the thing I would like to know is which are you going to do, chew gum or chew tobacco ? What is there about tobacco that will cause deterioration of the teeth ? Tobacco is a vegetable, cabbage is a vegetable. Cabbage is an article of diet, but it is capable of being so treated that there will be so much lactic acid as to injure the teeth. Tobacco is never treated in that way, so that you do not get the ill effects of it in chewing or smoking. Opium is a vegetable, a so-called medicinal plant, it has a great many derivatives, many of which are used in medicine as sedatives, etc. Tobacco *per se* does not injure the teeth any more than corn husks or bean shells ; not half as much as beans, for the simple reason that it does not contain the constituents that microörganisms can live upon. It is the misuse and abuse of tobacco that makes it one of the objects to which civilization is directing its eyes. The experiments which have been made with reference to smoking tobacco are successful as to its properties in that respect ; but does tobacco smoke affect the teeth ? If it does, it does it beneficially, that is, it will destroy the microörganisms on which the proliferation of dental caries depends ; but tobacco used in chewing is used in a bad way.

One of the reasons why people suffer from stomatitis and things of that sort is because they no not use anything that will act as a laxative, and tobacco to a great many people is a laxative, and in so far as it is a laxative it is beneficial to health. Nine-tenths of the bad smells which you encounter are not due to the supposed gases at all, but to the inaction of the ailmentaay canal. If you do not bathe, or if you do not drink enough water the contents of the alimentary canal are not discharged and consequently people suffer from bad breath. They perspire from the whole glandular system ; and are disagreeable to every one who comes in contact with them. Those people I recommend to take a smoke. You know what tobacco is, but the other odors comes from unknown and unseen sources that you do not know anything about.

With reference to the effects of tobacco on the teeth ; there is a circle all around the necks of the teeth above the termination of the enamel that is due to filth, that is due to the continual bathing of the mouth with the fluids, the juices that are extracted from tobacco by chewers. I have known any number of men who have chewed tobacco moderately and who are sixty-five and seventy years of age and their teeth are all sound, and I have known others whose teeth have decayed rapidly, but they would have decayed anyway.

With reference to the wearing down and mechanical abrasion, I had in my office to-day a gentleman who has eight teeth in his upper jaw and nine in his lower and he never chewed tobacco in his life, and all of these teeth have worn down until they are nearly to the gum. So that it is not an uncommon thing for the teeth to be worn down by persons who are not tobacco chewers. I don't defend the habit ; I never smoked until I was twenty five years of age and I didn't do it then from choice, but I do now and tobacco is a great satisfaction to me every summer, and it is to any man who may be walking in the woods, traveling in a boat, or be in a solitary condition. I apprehend that it is more used by people who are in the habit of thinking by themselves and who want to be undisturbed, and they use it for its sedative properties, probably, in the same way as some other people use articles of food. There is no doubt but what there are many people who eat too much pie every day, and pie is very much worse than tobacco if you eat three pieces a day, and if you eat ice cream every time you get a chance it is a very bad thing for the coats of your stomach. If you go to discussing tobacco on its merits I will put it against any vegetable or animal tissue that is used for the purpose of nutrition, because it prevents waste. A man can take a chew of tobacco, or smoke a pipe or a cigar and he can endure more, he can walk farther and go longer without water to drink than the man who simply eats the same quantity by weight of oats or wheat or corn or rice or animal tissue. So I say it prevents tissue waste, and that is the reason why the whole civilized world has taken up its use. I do not discuss the question of the use of tobacco simply on account of its preservative or its nonpreservative qualities on the teeth, becaure it is inert, it does not affect the teeth at all. There is nothing in tobacco deleterious to the teeth and microörganisms will not pry into tobacco juice. I simply state that as a proposition which any scientific man here can disprove if he has the necessary proof. Tobacco juice will not ferment when it is mixed with saliva and if you don't have a fermentable substance you don't have anything that putresces, and so you have to leave that out of the question. There is no doubt that tobacco will stain the teeth after the enamel has been worn off; there is no doubt that it will, on account of this agency around the necks of the teeth, tend to promote an aggregation of foreign particles and large deposits of salivary calculus, a form of which is the lepothrix buccalis, and that is one of the most annoying organisms that live in the mouth. One of the greatest scientific men in dental surgery advances the theory that caries is caused by lepothrix buccalis. It is claimed that microörganisms never produced caries in the world but on account of their location on the teeth and growing on what they were fed, that in the decomposition of the saliva in consequence of the coming in contact with it of ammoniacal products and the liberation of the elements by which they grow; and if dirt and grease, and things like that collect around them, perhaps there might be cavities. I don't advise any person to begin the use of tobacco, to chew or smoke it; I simply say from the standpoint of science that tobacco as tobacco is not injurious to the teeth at all.

Dr. Newkirk: Having used the weed at one time myself, I think I can look at the tobacco question fairly. I believe that some of the accusations ptesented against it to-night are true, that on the whole it usually does exert an injurious influence, especially upon the nervous system; that it very frequently has a bad effect on the action of the heart, and that physicians frequently meet with cases where they would be very glad if they could prohibit its use. Frequently they try to have their patients use it more moderately if they cannot get them to give it up altogether. Before the discovery of America civilized man did not know anything about tobacco. We might suppose, from the eloquent plea which we have heard from Dr. Harlan, that tobacco is probably the greatest civilizer which this world possesses. See how man has advanced during the last century since the introduction of tobacco into Europe! The only fault in that theory is that the poor Indian, who has used it a great deal longer, does not seem to have advanced at all. It has had one effect upon him and another upon us. There are a great many habits in the world that are hard to account for on any reasonable grounds. I think most people form certain habits because others do, just because it is the fashion. There isn't anybody who can give a sensible reason why the ladies should be trailing their skirts along our streets at the present time. There is no reason why they should and there is every reason why they shouldn't. I saw one of the most prominent reformers in my office yesterday. "Well," I said, "fashion has you by the skirts." She said she had to fall in with the fashion, she couldn't be singular; so I suppose that is why a great many people chew tobacco and drink, and why they do a great many things, just because other people do. There is no philosophical reason for it.

I have not in my experience seen the same things which Dr. Davis [the essayist] advanced with regard to pyorrhœa. I do not remember that I have ever seen a case where I had reason to suppose the disease was produced by the use of tobacco. I have seen some of the worst cases in the mouths of those who have not used it, and I should not consider it essential in the treatment of a case to insist upon the patient leaving off. However, in chewing, masses of the weed are sometimes forced into the interspaces of the teeth, crowding the gums at the gingival margins. This acts as a mechanical local irritant and I believe has more ill effect than anything in the chemical action of the tobacco.

Dr. Ottofy: I expected that the essayist might be able to state the reason why tobacco affects the teeth favorably. I did not think there were any who claimed that there was not some peculiar effect from tobacco upon the teeth. I do not think there are any dentists who claim that that effect is not beneficial ; at least I have never heard anyone say that tobacco smoke is injurious to the teeth. We attempt to explain the cause as though it was exerted on the exterior of the tooth, but it has been for some years my opinion that tobacco smoke affects the teeth favorably through the internal circulating medium, the nicotin in the circulation in all probability exerts its influence *within* the tooth. I have always noticed that a dead tooth in a consumer's mouth is much softer and more chalky than a dead tooth in the mouth of anyone else. No man can smoke and not inhale some of the smoke ; in this way he gets the nicotin into the circulation very rapidly ; it goes at once into the blood, being transmitted in the lungs, is circulated and brought into the tissues and the teeth, and it is there that I believe it exerts its influence. I believe that in chewing the beneficial effects are counteracted by the unfavorable effects on the soft tissues of the mouth ; however even this habit is a benefit to the teeth by means of the nicotin being introduced into the teeth ; it is injurious to the teeth, because chewing tobacco does contain impurities, especially molasses, sugar or grit, which will affect the gums and teeth. A habit the chewer forms, is to place the tobacco on one or the other side of the mouth on the outside of the teeth and let it rest there, which eventually results in the destruction of the gum tissue, thus overbalancing the benefit he derives from the tobacco. I would like to see the essayist continue to investigate, and determine if possible, where the beneficial effect of tobacco smoke in the mouth comes from ; whether it is the effect of the tobacco upon the enamel or whether it is the effect of the tobacco in the circulation through the pulp upon the dentine.

It seems to me that whatever beneficial effect the use of tobacco has in preventing caries of the teeth is probably due to its antiseptic properties. Smoking or chewing is one of the commonest ways in which some antiseptic influence is exerted within the mouth with sufficient regularity and duration to accomplish any appreciable result, and it does not seem necessary to go any further than that to account for the ordinary beneficial results from the use of tobacco in respect to the preservation of the teeth.

Dr. Hartt : I don't think we are looking at this subject in the right light ; if tobacco preserves the teeth it does it in a very unsatisfactory manner, and we as dentists owe it to ourselves and to our brothers, to discourage the use of tobacco, because it not only destroys the beautiful appearance of the teeth, but causes a man to become careless, taking less pride in them. In addition, the man who sells the tobacco gets the money that the dentist ought to have.

In a word, let the tobacco fiend worship at the altar of his family dentist, and arm himself with a good tooth-brush, and he will then have very little excuse for continuing in a habit which is not only expensive, but very annoying to the majority of refined and cleanly people.

Dr. Brophy: A number of years ago when the question of the preservation of the teeth by the influence of tobacco was under consideration, I had a discussion with a friend of mine who told me he had been making some experiments with a view to ascertaining whether tobacco really does preserve teeth or not; he believed that tobacco was an antiseptic and would preserve the teeth, he believed that smokers' teeth were better than the teeth of those who do not smoke, and that the teeth of chewers were better than those of people who did not chew, and he was surprised at the result of his experiments. He told me that he placed some extracted teeth in a solution of tobacco and in the course of six or eight weeks they began to disintegrate, the action of the tobacco upon them was similar to that brought about by the influence of acids. The gentleman who made these experiments was Prof. Haines of Rush Medical College. I wish Dr. Davis, if he intends to pursue this matter further, would see Dr. Haines and learn his conclusions and get the benefit of his experiments upon the teeth with tobacco. I mention his name because he is recognized everywhere as an expert upon the subject of chemistry and the results of his experiments would have a great deal of weight in settling the question. I would say that the tobacco he used was bought at the stores where tobacco is sold to men who chew and smoke; I don't know that there is any such thing as pure tobacco. The experiments Sir Humphery Davy conducted for over four years, with a view to procuring pure water, did not succeed. There is nothing absolutely pure; all substances are more or less adultrated.

Dr. Davis, in closing the discussion, said: As stated in the beginning of my paper, when I first took up the subject, I hoped to find some good argument in favor of tobacco, so I read, or looked over some twenty or thirty different authors, and laid just two aside who spoke favorably of the use of tobacco, and I have quoted from these two on this subject. Nothing would please me better, from the standpoint of a smoker, than to have some good authority for a favorable judgment in this matter, and I would have liked to have heard more in its favor by those who discussed the subject this evening, but only one person has spoken to any extent in its favor, and I for one should have been pleased if he had talked longer, as I wish to obtain all the favorable argument I can on this subject.

There is no particular point I can touch upon ; there have been a few things said which I might criticise or emphasize, but I think on the whole the matter has had a thorough exposition.—*Dental Review.*

SACCHARINE.

[TRANSLATED FROM THE SPANISH EXPRESSLY FOR THE ODONTOGRAPHIC JOURNAL.]

In a previous number of *La Odontologia*, I read a formula for overcoming fetor of the mouth, one of the components being saccharine.

In a recent interview with a friend and colleague, he acquainted me with experiments he had been making with saccharine as applied to the dentifrices more or less used by the profession, and the results obtained by him induce me to emphatically declare this a therapeutic agent called by its utility to an important place in the dental pharmacopœia.

Saccharine owes its name to its extremely sugary savor. This alkaloid was discovered in 1879 by an American chemist, M. Fahleerg, who extracted it from pit-coal. As found in commerce it usually presents the aspect of a very fine white powder, adhering to the fingers, little soluble in cold water ; very soluble in ether, and still more in alcohol.

In its origin and chemical constitution, and especially in its ineptitude for fermentation, it presents no analogy to the group of sugars. The sole property which assimilates it to sugar, is its sweet flavor, though in that there are found several differences :

1. Saccharine is 280 times sweeter than sugar.
2. Its savor is more persistent.
3. When applied upon the tongue, it produces a dry and acrid sensation in the throat.

This alkaloid in quantity, disperses an odor like bitter almonds, augmented by heat.

According to M. Madeno Massa, saccharine does not modify the urinary secretion, nor affect the milk nor the saliva, and injected beneath the skin it is rapidly absorbed. Doctors Assueco and

Mosso have experimented with its use upon themselves, for nine consecutive days, each beginning with three grams of dissolved saccharine per day, and increasing to five grams without experiencing any appreciable effects from it.

The savor of saccharine is of such intensity, that it sensibly persists in a solution of one gram to seven liters of water ; communicating to liquids and solids a characteristic flavor 280 times greater than that of cane sugar. Many persons can distinguish no difference in the water from two vessels, one containing 15 grams of ordinary sugar in solution, and the other only 5 grains of saccharine.

Certain insects have given evidence of a sensibility more exquisite than that of man, for when the pies of a pastry shop invaded by bees, have been covered by a slight solution of saccharine, the insects would not even alight upon them.

Can saccharine take the place of sugar in alimentation ? Certainly not, for it is not a nutritive principle, but if it lacks all value as an alimentary substance, it can be hygienically employed as an excellent medium for neutralizing the bitter or acid taste of various medicaments. Dr. Magitot recommends its use as an antiseptic in colutorios, in elixirs and dentifrices, in the proportion of 10 centigrams to each 1,000 grams of liquid. Its antiseptic properties recommend its use in the mouth where pathogenic micro-organisms abound, parasites as well as saprophytes.—GALVAN, *La Odontologia.*

THE PHENATE OF COCAINE.

We know that phenic acid, from the point of view of its local action, presents certain analogies with cocaine ; like the latter, it produces ischæmia and insensibility of the tissues. We would therefore expect that a combination of the two substances, under the form of phenate of cocaine, would have therapeutic properties, superior to those of the muriate of cocaine. This has been found to be the case by a Bavarian physician, Dr. von Oefele, who has for some time past employed the phenate of cocaine exclusively in the place of the muriate.

He has found that the phenic salt exercises an analgesic action much more persistent than that of the muriate, while the chances of producing toxic effects are much less. Glück was accustomed to add carbolic acid to his solutions of cocaine for the purpose of diminishing the chances of producing disagreeable results. These properties and advantages are explained by the fact that the phenic salt is almost entirely insoluble in water. Not being dissolved by the juices of the organism, the phenate of cocaine, employed as a local application, is absorbed but little or not at all, whence the absence of intoxication and the persistence of the analgesic action, which may last as long as thirty-six hours. Phenate of cocaine may be given internally as well as in hypodermic injection.

Below are some formulas used by Dr. von Oefele :

Local Applications in the Pharynx, on the Tonsils, etc.
Phenate of cocaine, gr. xv.
Absolute alcohol, ʒ iiss.
M. External use.
Phenate of cocaine, gr. xv.
Alcholized sulphuric ether, ʒ iiss.
M. External use.

For Hypodermic Injections into the Ear (*in case of Otalgia*) :
Phenate of cocaine, gr. iss.
Alcohol, ʒ i¼.
Dissolve and add
Distilled water, ʒ i¼.

Inject the contents of from one to three Pravaz syringes.—*Medical Abstract.*

DISCUSSION UPON THE DESIRABILITY OF EXTRACTION OF THE SIXTH-YEAR MOLAR.

The chairman, in introducing a discussion on "The Desirability of Extraction of the Six-year-old Molar," said the subject was of the greatest interest and importance in the treatment of youthful mouths. The subject might be considered generally as the treatmeat of irregularities and overcrowding of the human teeth. Their special point for discussion, however, was the tendency of overcrowding to prevent the destructive effects of caries, whether it might be justifiable as a conservative measure in cases, where they saw indications of danger to the youthful denture from this cause, to remove an upper and a lower tooth from each side of the mouth with a view to the giving of space to the anterior teeth, permitting them to settle, and as nearly as possible, isolate themselves, thereby preventing the inception of carious disease in such teeth, as had not already been attacked ; and if such a measure was justifiable, which teeth should be selected for extraction so as to give the necessary relief, and when would be the best time for extracting to secure the best results for the future of the mouth.

Dr. I. B. Davenport (Paris) said it was deplorable to realize how little was known of the true function of the organs of mastication. Men constantly attempted the treatment of cases of irregularity with their ideas of where the imperfection lay, and of what would constitute perfection quite reversed, and it was not surprising that disappointment resulted. His researches showed him that it was at first necessary to demonstrate so obvious a fact as that lateral contact of the teeth was an essential factor in a normal arch, and that good arches could not be disturbed without injury. This he was obliged to do because thousands of dentists the world over were mutilating the teeth both by extraction and cutting between them, on the theory that "contact is dangerous," and who did not realize the consequences of broken arches, and even to-day that fact was not enough appreciated. Good dental arches possessed such an arrangement as to be mutually self-supporting, thus tending to their own preservation and highest functional power. If a portion of the dental arches were removed, they fell together, and the new arches thus formed were apt to be unstable for want of proper support, and often pushed out into irregular shapes at the points of feeble resistance. When the arches fell together after extraction the roots of the teeth moved less than the crowns, and so the relations of the grinding surfaces were disturbed, and much of the interlocking support of the masticating surface was lost, and a large space was left which required much diminution in the size of the arch to obliterate. When the jaws were at rest there ought to be broad and firm contact between the two arches all around, and during any masticating movement there should be extensive progressive contact, as the articulation moved from one place to another. He had been criticised for insisting upon the application of knowledge of perfect or good arches in considering the results of treatment of imperfect arches, and it had been claimed that a correct judgment of a case could be reached only by comparison of the jaws before and after extraction. No source of knowldge could be despised, and he was as much in favor of employing that method of research as anybody could be. Much might be learned by comparing results with previous conditions, but the value of an opinion by such comparison as to whether improvement or injury had been done, as well as the ability to detect them, must inevitably depend upon the knowledge they possessed of what constituted a perfect denture. There were elements of error in the comparison of results before and after extraction. What might appear to be a better result at one period might be bad later, after the unbalanced forces had had a longer time to exert their influences. Take the slowly developing child that seemed to be "all teeth," a comparison of photographs years after extraction with one showing the previous condition of the child would be valueless as indicative of the degree of improvement of the features. Such were the cases with which some dentists delighted to dabble. The parents thought "the girl horrid," and "something must be done" they said. The too-supine dentist extracted the teeth, and after a time compared the two conditions as shown by models, and parents, dentist and all were happy. To contrast the actual results obtained with models of the past conditions without taking cognisance of the possible and not improbably changed condition produced by time alone, was, in his opinion, unscientific at least.

Mr. G. C. Campion (Manchester) said they would find in the new books which had been prepared for the use of the School Investigation Committee, that carious teeth were classed into two categories. There were carious saveable teeth, and carious unsaveable teeth, and among the latter were a large number of six-year-old molars. When it was proposed to illustrate the results of the extraction of the six-year-old molar it seemed to him and others that it would be a useful thing to have some models showing the results of extraction of those teeth at different times, so that they might find out under what conditions of the developemnt of the denture it was best to remove those carious unsaveable molars in order to produce the best possible results in after years. In photographs of models which have been taken in cases where the six-year-old molars had been removed, what he thought they would notice was that where the lower molar alone had been removed and the upper left the result upon articulation was very bad, and that where the six-year-old molars above and below had been taken out the result was very much better. In future cases, dentists ought to make a point of taking models before molars were removed as well as afterwards. By such a course they might gather a large amount of evidence upon the point which would be of great practical utility.

Mr. G. Cunningham (Cambridge) said that in the university town where he lived he had ample opportunity of seeing how great was the neglect of the teeth among the young men of the country. He quite agreed with previous speakers as to the necessity of models being taken to establish the desirableness or otherwise of removing the six-year-old molars, in cases of irregularity, and he produced a number of highly ingenious models which he had himself made.

Mr. C. S. Tomes (London) said the dental arch theory was untenable in the present case, because the key stone of an arch was not in its side. It was the side of the denture where the force of mastication came and they were talking outside the mark when they talked about the spring of the arch. Formerly he used to take out the six-year-old molars in case of irregularity, but now he would rather take out a sound bicuspid than a somewhat damaged six-year-old molar.

Mr. W. B. Pearsall (Dublin) said he looked upon the man who extracted six-year-old molars, if they were sound, as a criminal. He held that a bicuspid could much better be sacrificed.

Mr. Mundell said he had recently examined 160 boys in an important school and had found the most of them would have been benefitted by the extraction of the six-year-old molar. Much depended upon the constitution of the teeth. If the teeth were weak, he held that they should extract the molars so as to allow the bicuspids to be useful in after life.

Mr. F. Rose and Mr. Storer Bennett also spoke.

The Chairman, in bringing the discussion to a close, said the great end every dentist should aim at was the preservation of the greatest number of teeth in the soundest possible condition.—*Dental Record.*

STOP SPITTING.

The modern gospel of prophylaxis teaches that phthisis can be abolished from the face of the earth if only people would stop spitting. Says Dr. T. M. Prudden :

"If the vile and increasing practice of well-nigh indiscrimate spitting goes on unchecked in nearly all assembling places and public conveyances ; if the misguided women who trail their skirts through the unspeakable and infectious filth of the street are to be admitted uncleansed into houses and churches and theatres ; if theatres and court-rooms and school-houses and cars are to remain the filthy lurking places of contagion which their ill ventilation and their mostly ignorant and careless so-called cleaning necessarily entail ; if in sleeping-cars and hotel bedrooms the well are to follow consumptives in their occupancy without warning, or even the poor show of official disinfection ; if in ill-ventilated and ill-cared for dwellings, the well must breathe again and again the dust-borne seeds of tuberculosis ; if no persistent warning is to be given to the ignorant of the dangers which lurk in uncleanliness—then our task will be most complex as well as difficult in limiting the contagiousness of tuberculosis."

Of course cleanliness and plenty of water are necessary ; but, after all, it is the expectoration which carries the germ and promotes the spread of disease. Spitting, it seems, is not only a vile, but an increasing, habit. This is an unfortunate social fact which reformers do not seem to have grasped, despite its noxiousness. Shall we not have to have a Society for Prevention of Expectoration—except into sanitary spit-cups ? If one could stop the spitting habit, prevent the spread of consumption and finally stamp it out, he would be greater than a tariff reformer.—*N. Y. Medical Record.*

Stop spitting. Every dentist should join the war against the filthy American habit of spitting. The crusade has been started by a Health Society in Pittsburgh, Pa., and they are ably seconded by the *Medical Record* and by prominent physicians. Every dentist should help the crusade along.—*Western Dental Journal.*

DOES IT PAY?

In unison with the predominating question of the age, "Does it pay ?" we are inclined to raise the query as to whether or not it is profitable for a dentist to follow, month in and month out, the routine of office work without permitting himself, at reasonable intervals, the relaxation and recuperation which a judiciously spent vacation affords ? Can a man advisedly ignore nature to the extent of digging after the dollars to the exclusion of everything else ? Is it justice to himself or his family that he should jeopardize his health and his temper by a blind policy of continuons application ? Does it pay ?

Dentistry is a trying occupation. It entails upon the individual who follows it faithfully an undue nervous strain, which, it too long continued, results in some kind of collapse. It is confining to the body, and narrowing to the brain. Can a man afford to wrap himself about with habits which partake largely of the monotony of machinery, and do nothing to break that monotony ?

How rapidly will a man grow, or how long will he live under such circumstances ? And how much enjoyment does he get out of life while he does live ? The height and depth of human accomplishments should not be measured solely by the medium of money.

Happiness is the greatest good, and the greatest happiness is attained only through the greatest growth. Can a man grow who limits himself to a horizon bounded by two and thirty teeth? In order to develop, a man must have communication with the world. He must see something, and know by experience a few of the things that happen outside the four walls of his office.

We are prompted to these remarks by the personal knowledge of men who have been in practice for years, some of them more than a baker's dozen, and who never take a holiday. The question arises: Can these men, honest and worthy as undoubtedly they are, do their patients as good service in the long run as they could if they took advantage of an occasional breathing spell to renew their vigor? Dissolved to its final solution this matter of continued application proves an injustice to all concerned. The patient suffers as well as the practitioner, and the practitioner's family often suffer most of all. A man cannot be all that he should be to his home and friends, if he makes himself a slave to his office.

When dentists claim that they cannot afford to take a vacation they simply prove their own short-sightedness. We are firmly convinced that even in the matter of money a man loses nothing. Look at the men who have accumulated the most money in dentistry, and almost invariably they are men who have taken frequent vacations, men who have traveled extensively, and who have broadened their ideas by intercourse with the world. A man becomes a better financier, as well as a better individual, by extended experience, and the most observant man in the world cannot gain a very extended experience in a dental office alone.

Let us appeal to some of our perpetual pluggers of teeth and ask them to reflect and see if, after all, it pays.—C. N. J., *Dental Review.*

THE PROSPECTIVE M. D. S. MUST REGISTER; THE D. D. S., PRESENT AND PROSPECTIVE, AS IT MAY PLEASE HIM.

The principal misunderstanding of the new law seems to be concerning the registration of students. In this respect the phraseology is not at all clear, and there seems to be conflicting provisions. But a careful study of the whole Act makes plain the intent of the framers, and in this view it seems to us it must be interpreted.

There are two doors open for entrance upon practice. One is the possession of the regular degree of a recognized medical or dental college. The term of pupilage and the course of study for the obtaining of this qualification are, and must be, prescribed by the schools themselves.

The other entrance into dentistry in the State of New York is by obtaining the diploma of the State Society, and the terms on which this is granted are stated in the law itself. They are, a period of pupilage of four years, or a term of practice of six years, and the ability to pass the examination of the Board of Censors. The requirement that the pupil shall register and pay the necessary fee at the commencement of the term of pupilage is to prevent fraud, and for this purpose alone. If a dentist has the regular diploma of the schools, he is eligible to the degree upon examination, as being already a legal practitioner. The term of six years of legal practice outside the State, is to provide for the examination of dentists from States which have no restrictions requiring a diploma of the schools.

The plain intent of the law is, then, to provide a method for entering practice without attendance upon a dental or medical college, and the registration of students is only for such as propose to enter dentistry through that gate. Students who intend entering by the way of a dental or medical college, do not need to register with the Secretary of the State Dental Society. They may obtain their degree, and are then entitled to the privilege for which the four years pupilage with a preceptor is required.

It is but fair to say, that although the State Society apparently opens that door, it is more apparent than real. Practically, the Board of Censors will pass no student who has not obtained his college degree, even though he should have served a term of twice four years under a preceptor. In fact, the standard is so placed that none but graduates of the schools will hereafter receive the degree of Master of Dental Surgery. The examination is practically prohibitive to all others, the Society, through its Board of Censors, specifically stating that their object is to force all students to attend a college. There is, then, no necessity for the registration with the Secretary of the State Society of any student who proposes to attend either a dental or medical college.—*Dental Prac. and Adv.*

WINTER EVENINGS.

Very soon the long evenings will be here and the studious dentist will have at his disposal more leisure hours than should be spent wholly in frivolous pastime. Some of our most distinguished scientists have laid the foundation of their influence and popularity by wisely disposing of an hour or two in the evening time. Others prefer the early hours of the morning—this, however, is nearly always a matter of habit, more than of preference. No matter what may be the selfish wishes of the greater number of us, at least a portion of our time should be spent in reading, systematically, on some subject that we are desirous of mastering.

The late Henry Ward Beecher said that he read all of Gibbon's Rome in ten minute snatches before breakfast. We know from experience that Bloxam's Chemistry was read entirely in fifteen minute sessions during one winter, after dinner. In the same way Frey's Histology and Green's Pathology were gone over, as well as Wagner's greater work.

It would be a good plan for one interested to read Miller's work on the Micro-organisms of the Mouth, Black's Anatomy of the Human Teeth, Wood's Therapeutics or Smith's Operative Surgery, or some other general work in its entirety.

If one is disposed to do so a miniature chemical or mechanical laboratory may be fitted up in one's private residence, as well as a microscopical work room. Every one is not fitted for, nor has he the inclination to do microscopical work, but there are other departments lying fallow for want of attention, and we appeal to the unemployed to go to work, in some direction, from a stern sense of duty to those of our ranks who are doing so much for them—and reciprocate in some slight way the many benefits that they have received already from these unselfish labors. It may be that at first the work will be irksome, but soon you will become interested, then enthusiastic, and later you will be competent to instruct and delight your auditors, whose encouragement will spur you on to perhaps a great discovery for the benefit of mankind.—*Dental Review.*

UNIVERSITY OF BUFFALO—DENTAL DEPARTMENT.

The new dental school in Buffalo starts off with a class larger than was expected. It has met with the same local opposition that all new schools have encountered, but which in this case was more than usually bitter and irrational. One would have thought that mere home-pride and common professional feeling would have prompted those who were inimical, to an attempt to make matters better instead of worse, but this has not been the case. The spite of some of those who could not have their own way has been vented in impotent efforts to prevent the matriculation of students, and to cripple an honest endeavor to make the best of a necessity which had arisen.

The bitterness and personal animosity shown have but stimulated the efforts of the promoters of the school, and made them the more determined to organize an institution that shall be a credit to dentistry. Considerable more money and labor have been expended than would have been under other circumstances. Thoroughly competent, and even eminent men, have been brought in from outside, who might not have been secured but for the opposition that has acted as a spur to exertion. The opposing element has made its disaffection so public, that this plain statement should in justice be made.

The organization was effected by the men whom the University chose for that purpose, and they have tried very hard to prove faithful to the duty that was absolutely thrust upon them. They selected the men whom they thought best adapted and qualified for the positions. It was impossible for all to have places, and every dentist in Buffalo could not be put in a position to dictate the policy to be followed. When two men ride upon the same horse, one must of necessity ride behind. The men selected by the University have acted upon their best judgment, and their decision must be final. That is all there is of it. They sincerely regret any difference of opinion, and solemnly declare that the fault is not with them, for they have sought only peace. They have entire respect for honest differences of opinion, but by mere factional opposition and personal-spite work they are not in the least moved. The curriculum adopted and teachers called, speak for the school in language louder than mere words.—Current issue *Dental Practitioner and Advertiser.*

ON THE CONTINUITY OF PROTOPLASM THROUGH THE CELL WALLS OF PLANTS.

Sachs, in 1863, proved the continuity of protoplasm from cell to cell through sieve plates, and in 1880 made the remarkable statement that this continuity was universal in plants. He said, "Every plant, however highly organized, is fundamentally a protoplastic body forming a connected whole, which, as it grows on, is eternally clothed by a cell membrane, and internally traversed by innumerable transverse and longitudinal walls." Considering the difficulty of successfully demonstrating the continuity of protoplasm in many parts of plants, more especially where the cell walls are thin, and with a view to finding which plants of those accessible to most students in our country are most suitable for the purpose, we began the work by examining the cortical layer of one or more species of about seventy-five genera of native and cultivated exotic trees and shrubs. Without going into details in regard to all the various methods which have been tried by Sachs, Gardiner, and others, we will merely state that at first beginning, a thin fresh tangential section was made with a razor and at once a drop of strong sulphuric acid from a glass rod was placed upon it. After one to three minutes, depending on the thickness of the cell walls of the specimen examined, the sections were rapidly washed in water, and stained with iodine or analine blue.

Chloriodide of zinc was also tried. But the most satisfactory results were obtained by placing a thin section in a solution of iodine, until it turned brown. Then wash, and then run strong sulphuric acid under the cover-glass, and soon, again, draw out the acid, replacing it by water. After washing, mount in glycerine and color with green or blue analine.

In these experiments, a great deal of time and labor for weeks may here be passed over by a mere mention of the fact, calling it "dead work." Now for the results: The large masses of protoplasm in all the cells properly treated were very pronounced, and from each mass extended arms or strands in every direction. Each arm in a cell exactly approached and met or seemed to *almost* meet one from an adjoining cell. In some places, in every species examined, a continuous strand seemed to extend from one cell to the next one, but this was very likely due to some imperfect work in making the experiment. In most instances there was a light line, through which the connection could not be successfully traced. At this place the tips of the strands were swollen and between them a light, hazy look was very common.

The question to be demonstrated was the presence of delicate threads of protoplasm passing from the swollen tip of one strand to the swollen tip of a contiguous strand in the next cell. In the cells of the endosperm of palms the walls are very thick, and the space between the tips of contiguous strands rather prominent; but in the cortical layer of our woody plants the cell wall is rather thin, and the space between the tips of the strands is a very narrow one. To trace threads across this narrow passage is difficult and often unsatisfactory, as the threads are very short. We employed a Spencer's one-eighteenth-inch immersion objective.

Among the most satisfactory of the many specimens of cortex examined was that of the common lilac, where the sections were taken from large-sized twigs two to three years old. *Viburnum opulus* (snow ball) was much the same. In specimens of our hawthorns the strands were slender and longer, but the threads joining their tips showed very well. Perhaps the best one of all was taken from the cortex of *Alnus glutinosa.* Here the strands are of good size. At the middle lamella the connecting threads of protoplasm are three to seven or more in number, and bulge outward, the whole somewhat resembling a barrel in shape. Unfortunately a drawing of the alder was mislaid. The drawing of the endosperm of *Heterospathe elata*, a palm seed (Fig. 3), has been copied from the work of Mr. Gardiner, and very closely resembles that of the alder, above referred to. In A is seen endosperm of *Heterospathe elata*, showing threads of the tips of four contiguous strands. The middle lamella is but little developed; in B, ripe endosperm of *Phœnix dactylifera* after treatment—one cell with parts of several others.

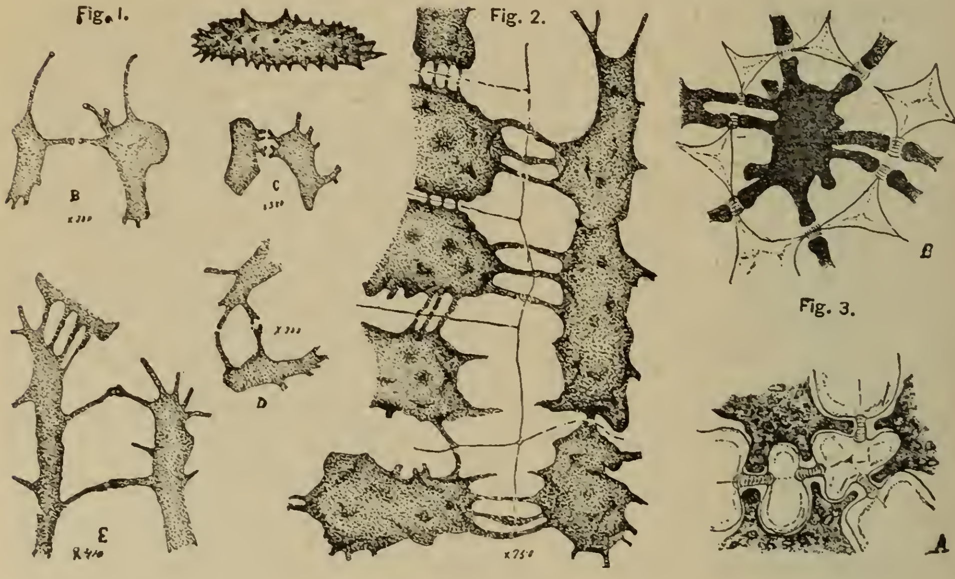
Fig. 1.
Fig. 2.
Fig. 3.

The strands of protoplasm extending out from the central mass in the cells of *Amelanchier* (Fig. 1) are often forked near the tips.

The specimen is one of the best examined. The cells are not large, but are comparatively long, and having exceedingly long protoplasmic strands. From one cell (A) many pointed strands of protoplasm seemed to radiate in all directions, their form of cells were numerous, and in some cases strands extended to other cells. The peculiar point illustrated by B, C, D, and E is the forked appearance of protoplasmic strands at the point of junction between the cells. Here in many cases the connection seems to be broken, but in above, as in E, exceedingly fine threads apparently unite the two strands. The middle lamella is easily seen in this specimen, and it is here where we always find the break, if any, in the connecting strands.

In *Cratægus* (Fig. 2) the continuity is very pronounced. The middle lamella are distinct. At the middle lamella there is a difference apparently in the strands of protoplasm. Strands do not appear as dense at this point as elsewhere. Strands in all cases come to the middle lamella at the same point as those of the neighboring cells.

In the thick-walled cells of the ripe endosperm of many palms, Mr. Gardiner demonstrated that extremely delicate threads not only passed from tip to tip of the strands of protoplasm, but through the thick walls as well.—BEAL (W. J.) AND TOUMEY (J. W.), *American Monthly Microscopical Journal.*

GUTTA PERCHA.

[TRANSLATED FROM THE SPANISH EXPRESSLY FOR THE ODONTOGRAPHIC JOURNAL.]

The sparseness and extinction of the gutta-percha tree, has seriously embarrassed many industrial enterprises, especially the submarine cable companies, to whom this gum is so important.

The minister of the postal and telegraphic service in France, sent M. Serullaz to Asia two years since, commissioned to search for gutta-percha trees. Having recently landed at Marseilles, coming from Tonquin, the commissioner reports that he found immense forests of *Isonandia gutta* in Malasia, and has been authorized to transplant some hundreds in Algiers.

CHARGES FOR PROFESSIONAL SERVICE.

The amount charged for services is one of the most important factors that help to make or mar the fortunes of the modern practitioner of dentistry. This is especially the case with the beginner. Let him be ever so neat, gentlemanly, and thorough in his work, and charge four or five dollars an hour, he will spend most of his time idly, sighing for the patients that never come. While across the way he may see an untidy person constantly busy over an ever-increasing crowd of patients.

The cause of this most unfortunate state of affairs is only too evident. The experienced dentist is not paid merely for excavating a tooth, or for materials placed therein. This fee remunerates for skill, for delicacy of manipulation, for the perfect confidence which he inspires in his patient, and for many other desirable qualities which years of practice alone can give.

If this be true, the failure of the beginner to build up a practice while charging the same price as the older dentist is only what might be expected. Until he has a certain amount of experience outside of the dental college he should keep the fees reduced to such a point that patients will come to him in numbers.

One of the most successful practitioners of Philadelphia, in speaking of his early professional life, said, "I made it a rule to be always busy. If I could not fill my time at two dollars an hour, I charged one dollar. If one dollar could not be paid, rather than be idle I worked simply for the cost of materials. Thus, my hand gained skill, my experience enlarged, and the number of my patients increased. True, the low-priced patients, in themselves, did not bring much money, but often, very often, they were the means of sending me their friends, who paid liberally."

The man whose practice consists of a few rich families, charged exorbitantly, occupies a humiliating position, as he is necessarily entirely dependent upon them for his material existence.

A dentist to be independent should have a practice so large that the loss of three or four of his most wealthy patients should be a matter of little moment. To bring about this desirable state of affairs he should be sure to give a liberal return for money received.

But, it has been said by beginners, "If we start with our prices too low, how shall we be able to raise them?"

The answer to this is clear and simple.

If a dentist has eight hundred patients, all of whom pay two dollars an hour for services, he can first raise the prices to new-comers, and later, as confidence in his position is established, he can extend the advance throughout the entire practice.

Many established practitioners regard low prices in beginners as a fault, as an attempt to undermine the average scale supposed to be charged by the profession at large. Guided by their protests, many a conscientious beginner fails to collect a practice, where one without regard for dental ethics succeeds.

A professional man is paid quite as much for the manner of performing the work itself. Leading actors, like Booth or Jefferson are not disturbed because large numbers of professionals work for a small sum nightly. This fact in no wise jeopardizes their large incomes. So long as their work maintains its high excellence they need not fear competition.

There are hundreds of teeth extracted to-day because the people cannot afford to pay the ordinary charges. This is so much work lost to the profession at large, so much actual money thrown away, so much benefit taken from the community. There are many graduates who would willingly perform this labor for very moderate prices if they could get it. But they are too apt to drive it away by indiscretion.

Almost the first questions a young practitioner asks is, "What shall I charge? What do you charge? These two questions many times have caused him years of sorrow and hopeless longing for the clientele that never comes.

If he had commenced with the idea of doing a great deal of work for a little money, his skill would have increased, his experience enlarged, his reputation spread. Patients would have flocked to him as to the one person whom they would permit to fill their teeth, and then, independent of the whims or idiosyncrasies of the few, he could have charged fair prices with a feeling of security in the rapid development of his reputation and the enlargement of his bank account.—*International Dental Journal.*

PHAGOCYTES AND IMMUNITY

In an interesting discussion before the Pathological Society of London, relating to the various doctrines concerning phagocytes and immunity, Dr. Ruffer recently presented some very interesting facts and arguments in favor of the doctrines of Metchnikoff, a few of which we quote:—

"As to the substances which attract the amœboid cells toward the virus, they have been proved to be the poisons secreted by micro-organisms, or contained in their bodies. It is probable also, that in some cases these poisons have the opposite effect, namely, that of repelling amœboid cells. I have lately gained considerable evidence to show that the same substance may attract or repel leucocytes, according to the state of concentration. I may mention one such experiment. If a small piece of sterilized sponge be soaked in pure turpentine and placed under a guinea pig's skin, it will be found that, even after a lapse of twelve hours, not a single amœboid cell has penetrated into the sponge. Sections made through the sponge and surrounding parts show that the amœboid cells have emigrated in considerable numbers into the tissues around, but that they are arrested at a certain distance from the sponge and can proceed no farther. A piece of normal sponge placed a little distance off, is absolutely crammed with amœboid cells, though the turpentine sponge contains none at all.

"Now allow a similar sponge to soak in a very dilute solution of turpentine in olive oil, and place this sponge, together with another containing fine sterilized olive oil, and a third soaked in pure turpentine, under the skin of a guinea pig. After four hours, the sponge in the solution of turpentine in olive oil is crammed with amœboid cells, while the other sponge soaked in olive oil, contains but a few, and that in turpentine, none at all. Here, then, we have the same substance exhibiting totally different effects according to the concentration with which it is applied. It is very probable that such is the case with baçterial poisons also, and there are already some experiments which support this view. Moreover, as Dr. Woodhead has already pointed out, the same substances which in a non-resistant animal repel amœboid cells, attract these same cells in considerable numbers when the animal has been artificially protected."

As regards the theory of Dr. Klein, that leucocytes, instead of being the destroyers of microbes, are selected by them as favorable places for their development, or as places for refuge, Dr. Ruffer very aptly remarks :—

"With regard to what takes place in the internal organs, the only evidence in favor of this theory is that micro-organisms are often found in cells. But I contend that this is not sufficient. Should one meet a dead lion and find a lamb inside, he, knowing the habits of the lion, would not conclude that the lamb had taken refuge there. True, after a surfeit of lamb, the lion might die of indigestion, but the chances of the lamb ever getting out alive would be very small. Similarly, knowing the voracious habits of the lymphoid cells of the internal organs, before we can accept this theory, observations must be made showing that the bacilli of their own accord force their way into the cells ; explanations must also be found for the fact that the micro-organisms perish in the cells in enormous numbers ; and lastly, it must be explained why, according to Bardach, Soudakewitch, and others, animals normally resistant against a given microbe succumb almost invariably when the spleen is removed.

"Remember also, that phagocytes exert a distinct choice between two kinds of microbes. They will leave the bacillus of tetanus for the micro-bacillus prodigiosus, and the streptococcus for the bacillus of diphtheria. This is well illustrated in the diphtheritic membrane, where at the surface one can see leucocytes taking in numbers of bacilli, but leaving streptococci almost untouched, with the immediate result that streptococci are often met in the deeper parts of the membrane, and with the remote result that secondary abscesses occurring in the course of diphtheria are never due to the bacillus of diphtheria, but to some other micro-organism.

"The study of the diphtheritic membrance shows the remarkable resisting powers of leucocytes, for although the tissues underlying the membrane are necrosed and dead, the leucocytes have the power of marching in numbers right up to the bacilli and waging war against them, although many, as I have shown, perish in the fight."

Respecting the reputed bactericidal property of serum, Dr. Ruffer makes the following interesting observations: "Some investigators, the chief of whom is Dr. Buchner, of Munich, have laid great stress upon the bactericidal action of the serum of resistant animals. I may perhaps be permitted to express my great admiration for Dr. Buchner's work and that of his followers, and I am ready to allow that the facts, as stated by Dr. Buchner's work and that of his followers, and I am ready to allow that the facts, as stated by Dr. Buchner, are in the main correct; but I am far from accepting the view that the fluids of the living animal play any part in the destruction of microbes in the organism.

"In the first place, let us see what happens in animals which have undergone no protective treatment. If the bactericidal action of normal serum has anything whatever to do with the resistance of animals toward a particular kind of microbe, then whenever the resistance of an animal against a given microbe is great, the bactericidal action of its serum on that microbe should also be marked; and that when an animal is not resistant, the bactercidal action of its serum should be feeble, or at least slighter than that of a more resistant animal. A rabbit is not resistant, and its serum possesses a strong bactericidal action on the anthrax bacillus; a dog is more resistant, and its serum has no bactericidal action on the anthrax bacillus. We have one exception, that is the white rat, which possesses considerable resistance against anthrax, and the serum of which has a strong bactercidal action on the bacillus anthracis *in vitro*. But this exception proves the rule, for when the bacillus anthracis is inoculated into a white rat, it thrives at first remarkably well, though it is ultimately destroyed by the animal's amœboid cells. That teaches us another thing also, namely, that it is impossible to argue that those phenomena which occur *in vitro* exclusively, takes place in the living body.

"Were other examples necessary, I would draw attention to the fact that, *in vitro*, the serum of the non-resistant rabbit is a bad cultivating medium for the bacillus pyocyaneus, whereas the serum of the resisting guinea pig is an excellent cultivating medium for the same bacillus. And conversely, I would point out that the serum of the resistant rabbit is an excellent cvltivating medium for the bacillus of Chauveau, and that of the non-resistant guinea pig a very bad medium for the same micro-organism. Moreover I have proved that the fluids of both kinds of animals when alive, form an excellent cultivating medium for this same bacillus. And yet another example of a similar nature : The bacillus of diphtheria in most animals is only found at the seat of inoculation, and in rabbits and guinea pigs never spread any farther : and yet the serum of such animals is an excellent cultivating medium for the bacillus of diphtheria."—*Bacteriological World.*

FREE TRANSLATIONS AND ABSTRACTS FROM FRENCH, GERMAN AND ITALIAN JOURNALS.

EXPRESSLY FOR THE ODONTOGRAPHIC JOURNAL.

The law restricting the practice of dentistry in France to the possessors of a diploma of doctor of medicine, health officer, or dentist, which has excited such fevered discussion among the French dental societies and the profession generally, passed the Senate in July. Every amendment asked for by the Senatorial committee was adopted. The concessions made were largely due to the efforts of Dr. David, who suffered much criticism from the *statu-quo*-ists, and has since died. Under the new law, which becomes active one year after the date of its promulgation, all foreigners must either undergo the same examinations as the native students receiving diplomas, or "Licenses may be accorded by the minister, conformably to a course decided upon by the Superior Council of public instruction." Dentists holding these special diplomas or licenses, can "practice local anasthaesia," and may "syndicate."

Le Monde Dentaire begins a series of articles discussing the French colonies, beginning with Tunis, considered as a field for dental practice, and the writer hopes that his setting of the facts will induce some Parisian graduate to "carry under the blue sky of the Regency the results of his instruction in the professional schools."

The *Revue International D'Odontologie* devotes the greater number of its September pages to the lively discussion before the *Acadèmie de Mèdcene* upon "accidents of dentition." The following resume, by M. P. Dubois, ably covers most of the ground: "The different theories sustained before the academy, give rise to problems of considerable importance, involving not only the study of dental evolution and pathological phenomena therewith associated, but also the more vital questions of dietetics and hygiene applicable to infancy. This discussion results from two opposing opinions: First, that of the physicians who admit the existence of aecidents of dentition; second, that of a dentist who denies it."

The difference of the point of view will be noted, and that of the sources of information. The physicians rest their theory upon clinical observations at the bedside of their patients; M. Magitot bases his upon experiments on animals, as well as upon indications drawn from physiology. How is it to be explained that a normal process can have pathological consequences, especially when it is considered that several years later, a similar phenomenon, the appearance of the second dentition, takes place without any general disturbances? The relationship of the phonomena, the logic of physiology, are absolutely contrary to belief in accidents of dentition, and such belief requires an effort of the intellect, setting aside rational presumptions. Nevertheless the facts are with us, and all value cannot be denied to the unanimous opinion of the medical profession from Hippocrates to our day. We have not here to do with doting mothers frightened and deceived by a visible fact, yet ignorant of the true source of the disorder; but with a medical tradition supported by modern practitioners of great clinical sagacity and diagnostic insight. One must be sure of his knowledge before impugning the affirmations, based on clinical knowledge. of M. Pamard, M. Hardy, M. Peter, M. Charpentier, M. Hèrard, M. Constantin Paul; well entrenched in the strength of his experiments not to recognize the weight of the statement of M. LeRoy of Mèricourt, that he sustains his opinion "not only as a physician, but as the father of six children and grandfather of ten," or to set at naught the declaration of M. Hèrard: "No doubt the accidents of dentition have been much exaggerated, but to deny them is to deny evidence." Even M. Olivier, the physician least inclined to accord to such accidents an imaginary rôel, says: "I have not denied their existence, but have only sought to guard against the opinion which exaggerates their frequency."

The experiments of the laboratory, and clinical observations, are in their nature absolutely contradictory, and to disentangle the truth the clinicians should make experiments and the experimenters should take observations. For the complete triumph of the theory of M. Magitot, he should demonstrate not only that accidents of dentition are not the essential cause of the disorders accompanying it, but further that they are not an additional and occasional cause. This proof he does not furnish; for it is unnecessary to say that neither M. Magitot nor M. Galippe is consulted for accidents of dentition. It is not the usage to consult the dentist under such circumstances, even if his medical studies have been extensive. The experiments of M. Magitot are not so conclusive as they appear; nervous irritability, reflex action, are not the same in children, especially of civilized races, as in the lower animals.

M. Magitot asserts that the first dentition is never accompanied by local lesion; this point is disputed by all the observers, who affirm that there is inflammation and sometimes tumefaction. The gingival pruritus and ptyalism support this assertion.

M. Galippe affirms the connection of accidents of dentition with dental anomalies properly so called. This is to be proved, and the parallelism has not yet been established. He says that rationally, there can be no such thing as accidents of dentition.

At the Academy of Medicine the rational point of view has not been examined, but only the clinical side as it aids in etiological induction.

To say that accidents of dentition do not occur in normal infants does not decide the matter. Few infants exist absolutely normal, especially in the cities. Here is the question: in a child slightly out of the normal condition, because of hereditary antecedents, insufficient alimentation, yet still not appreciably in a pathological state, affecting the weight and the appetite,—would the phenomena attending the eruption of the teeth provoke a sudden crisis, which should disappear as soon as the eruption was accomplished? Did such crisis appear in both healthy children and those in a pathological condition, it might be inferred that the eruption of the teeth was the primary and essential cause. Such is not the case, and here come the etiological difficulties. They can be resolved by giving to accidents of dentition a secondary and occasional part to play.

Pregnancy, menstruation, growth, the establishment of puberty, the menopause, are also physiological facts, which yet determine general accidents. They do not entirely create them but are nevertheless pathological factors. If the experiments of M. Magitot do not suffice to efface from the list of medical nosology the maladies attributed to dentition, it is certain that the idea of the practitioners of the beginning of the century upon the important part played by dental evolution in infantile pathology, will have few defenders left.

One point settled is, that accidents of dentition occur especially when the general condition is bad, and their action is analogous to traumatism, to chills, to physiological crises cited above. They reveal and aggravate an anterior state, tending to sickness. The eruption accomplished, that is to say, the occasional accident passed over, the situation loses unquiet character to return to health or a latent pathological state, according to the treatment and the constitution of the child. Let us free ourselves of the current ideas and the artificial customs that hamper us, and enjoin a rational diet, the assimilable lime of the maternal milk and of bread, and have it in mind to prepare coming generations to approach nearer and nearer to the normal conditions. Then M. Magitot will be right. Accidents of dentition will disappear from dental nosology."

M. Crowley, it appears, has had the temerity to hunt up an article of the illustrious Magitot, in the Dictionnaire Encyclopêdique des Sciences Medicales, in which he fixes the date of the eruption of the canines at from 30 to 33 months, and to declare this an error, fixing the date at 16, 18 or 20 months, and pointing out other errors in the order of dentition, as stated by M. Magitot. The editor of the *Revue* asserts that the criticism has the effect to cause the "stomatologic Jupiter" (Magitot) to withhold his thunder temporarily, and pertinently asks "with anxiety" what, in the probable event of Magitot becoming one of the examiners conferring diplomas, will be the order adopted by him, for the eruption of the teeth of the first dentition.

Madame the Widow X, dentist—has the honor to notify her numerous clientage that she has removed to No. ——— ——— where she will continue to extract teeth as in the past.

Further, she continues to repair men's hats, felt, silk, or straw, at moderate prices.

Mme. X may be called for at home. *Le Monde Dentaire.*

Some interesting experiments have recently been made at the bureau established at Karlsruhe for the testing of food stuffs, upon the resistance of aluminium to various liquids used for nutrition and gustatory enjoyment. Canteens and goblets of this metal filled with wines of various kinds, beer, cherry juice, cognac, coffee, tea, milk, honey, vinegar, etc., were examined after standing from 4 to 28 days, for difference in weight, both of the containing vessel and the contents. Hardly an appreciable solubility was excited in the aluminium by contact with these substances ; even ten per cent. acetic acid contained, after eight days, only slight traces of metal in solution, and boiling water stood a half hour trial, remaining perfectly free from any trace. The well known lightness of aluminium shows the importance of its use for common vessels, from a hygienic point of view, a regular half liter decanter of glass, for example, weighing with its appurtenances, goblets, leather straps, 800 grains, while the same in aluminium weighs only from 250 to 300 grains.—*Journal für Zahnheilkunde.*

Der Monatsscerift der Vercine deutscher Zahn küntzler reports the case of a country woman with whom a dentist of Cologne remonstrated because she screamed during the extraction of a superior molar root. "But," she replied, "it hurts to have teeth drawn at the age of 104!" She had come in alone from the country, and trotted out of the office well satisfied with the operation. She had over twenty good teeth.

Signor Paolo Carrebas of Pisa reports in *Il Progresso Dentistico,* that a lady of 48 came to him, bringing a note from her physician asking that a new denture be made for her, as the old one had caused necrosis of the palatine arch. Examination revealed a hard protruberance just where the edge of the air chamber of the plate pressed it, this having been supposed to be the cause of the trouble.

It was found to be a canine tooth in a horizontal position, the root lying anteriorly, the crown posteriorly. After its extraction, as had been prognosticated, the cavity which contained it proved to communicate with the nasal fauces, but it closed promptly and completely.

A dental society has been organized at Rome, Italy, under the presidency of Signor Francesco Serletti.

THOSE DENTAL DEGREES.

Dr. Milton B. Straight, who was next seen, said in relation to the propriety of conferring honorary degrees, that as long as Universities existed they would confer honorary degrees upon worthy men who were entitled to such recognition by experience and attainments in special branches of learning, and that the gentlemen upon whom the degrees had been conferred by the University of Buffalo were in all respects worthy of the honor. "Remember," said Dr. Straight, "that it was not the Dental Department that conferred the degrees, but the University, and that the Association of Faculties has no jurisdiction whatever over the University. That Association is a voluntary organization legitimately formed, it is true, to advance the educational interests of the profession, but it has no jurisdiction over the action of the University."

"But did not the University confer the honorary degrees for the purpose of qualifying the conferrees to become members of this new faculty?" asked the writer.

"Not at all," answered Dr. Straight, "for the reason that it wasn't necessary. They were legally qualified without the degrees, which were conferred upon them simply as a token of recognition by the University to the dental profession. You may say further that this school will be established and instruction given this fall, and it will succeed, and its faculty made up of the very best material that can be commanded. I regret that I was not able, by reason of lameness, to attend the meetings at the Falls, and do not know from personal contact with the members of the Association what their views are. But I am giving you merely my own opinion."

An interesting contribution to the discussion as to the effect the conferment of honorary degrees on Drs. Southwick and Howard will have on the standing of the dental department of the University of Buffalo is given by Dr. Roswell Park, who replied to questions on the subject last night as follows :

"I thoroughly endorse all that Dr. B. M. Straight said in the *Courier* this morning. This whole business is a tempest in a teapot, and the matter of honorary degrees is simply a very transparent excuse for opposition on the part of a few short-sighted or jealous individuals.

"First of all, the Association of Dental Faculties is a purely voluntary affair, without legal existence or corporate individuality, which has nothing more to do with the University of Buffalo proper than I have to do with the editorial policy of the *Courier*. For them or any individuals in their Association to criticise the action of the Council of our University is a gross piece of impertinence.

"In the second place, the conferring of an honorary degree is purely a matter of compliment, or an expression of confidence, and can in no wise affect the standing or the competency of the individual thus honored. It gives him no legal right which he does not otherwise possess, and may be compared to brevet rank among military men. These degrees were not conferred by the dental department, but by the Council of the University proper, a body of men whose motives are not to be impugned, nor their compliments despised.

"The gentlemen who were thus honored are universally recognized as competent both to practice and to teach, and no diploma which they may sign can be made any less valuable because their fellow townsmen have thus honored them.

"It was expressly stated that these degrees were conferred *honoris causa*, as degrees are conferred in a similar way by universities all over the world. That such a mark of esteem should be made an excuse for opposition to the school which they have founded, is so silly and unreasonable that I wonder any reputable men should be willing to associate their names with any such movement. The gentlemen who behave in this way ought to vacate any claims which they have ever made that they belong to a learned profession. It savors too much of trades-union tactics. The new dental department will stand or fall on its own merits. It gives unusual promise of being a first-class school, and now contemplates such superior instruction as is given in no other school in this country. Should it come up to the mark it has set for itself, it cannot be put down by any absurd local opposition. Should it fall short of this mark, the gentlemen who have organized it will be the first to move its discontinuance.

"I am sorry to see a few of those whose opinions I have heretofore esteemed, engaged in such an iconoclastic enterprise as that to which they have lent themselves, and am convinced that they will in time see the foolishness of their attempt, or else will demonstrate that their motives were absolutely ulterior and unworthy of them, and that their present action is merely a veil or an excuse."—*Buffalo Courier.*

THE DEPARTMENT OF DENTISTRY.

It is not unreasonable to suppose that the Buffalo public has any sympathy with those Buffalo members of the National Association of Dental Faculties who have recently undertaken a boycotting campaign against the newly established Department of Dentistry in the University of Buffalo. The advocates of this singular boycott assert that the dental department of the University can not acquire "a reputable standing in the eyes of the profession" because the Council of the University saw fit to confer an honorary degree upon two Buffalo dentists who have consented to make the sacrifice of their time and services for the benefit of the dental department!

This extraordinary brand of boycott will prove to be, as it ought to be, a failure. Nearly all the prominent dentists of the city have no sympathy with it, and it is strange that any Buffalo dentist should do anything or say anything to embarrass the efforts of the public-spirited citizens who have for years contributed their time, money, and professional services to the maintainance and promotion of the University of Buffalo.

Between fifteen and twenty of the most highly respected citizens of Buffalo, as the Council of the University, have for years been laboring to enlarge the sphere of the institution with a view of making it a first-class seat of learning and more and more an honor to the city. They have encountered many difficulties, but with highly commendable public spirit and fidelity to the welfare of the University and of Buffalo they are gradually working out their plans. To the medical schools have been added in recent years a law school and a school of pharmacy. The new building that is in process of construction, primarily for the benefit of the medical school and the school of pharmacy, will offer faculties for the establishment of a school of dentistry. Speaking of the latter, Dr. Roswell Park, a member of the Council of the University, says: "It gives unusual promise of being a first-class school, and now contemplates such superior instruction as is given in no other school in this country."

In view of these facts, it is the duty of the citizens of Buffalo to give every possible encouragement not only to the Council of the University but also to the newly established school of dentistry. The people of this city owe a large debt of gratitude to the officers and members of the University who, without compensation, have for years given freely of their time and services for the benefit of Buffalo. Local pride alone, to say nothing of other motives, should arouse Buffalonians to a fuller appreciation of the work that has been done by these citizens quietly, loyally, and gratuitously. In these days of Buffalo's prosperity and rapid growth our citizens can not afford to be indifferent to such wholesome and beneficent services. All honor to the men of Buffalo University and Niagara University and all other educational and philanthropic institutions—men who have done so much for the uplifting of the community and the advancement of the public welfare.—Editorial, *Buffalo Courier.*

THE NEW DENTAL COLLEGE.

There was a very pleasant opening of the Dental Department of the University of Buffalo last evening. The faculty of the school has every reason for congratulation at the promising outlook for this new institution, which so materially adds to the educational advantages of the city.

The temporary quarters, which have been engaged and fitted up for use until the new University buildings are completed, comprise the whole upper floor of the building at Nos. 639 and 641 Main street. So admirably are they adapted and so well equipped, that they might very well do for a permanent home. When it was found that the building on High street would not be completed in time, arrangements were made for establishing the infirmary and laboratories in the old college building.

But applications were made in such number that it was at once seen that there was not space enough there, and the rooms over 641 Main street were engaged and entire new furniture and fittings ordered for it. A few days more brought so many additional applications that the rooms adjoining were rented and workmen immediately started.

Last evening, (Oct. 27), the school was formally opened. The students, with a few invited guests were present, and addresses were delivered by Prof. Julius Pohlman, from the University Faculty, and Prof. M. D. Mann, Dean of the Medical Department, and Hon.

James O. Putnam, Vice-Chancellor of the University, who, in closing, formally accepted the school in the name of the Council, and declared it open for the instruction of students.

The class will probably number between forty and fifty. The regular term does not begin until Oct. 25, the first month being a preliminary term for special instruction in the medical studies, and for laboratory work.

The Infirmary is now open in the afternoon, and will soon be open all day, and everything is ready for the reception of patients. They will have every operation in dentistry performed under the direct supervision of the most skillful dentists of the city, who are the teachers and demonstrators, while the fees charged will be only enough to cover the necessary expenses. — *Buffalo Commercial* (abstract).

PROGRESS IN THE UNIVERSITY.

The Dental Department of the University of Buffalo, the latest addition to this flourishing institution, opened its first term last evening in temporary quarters on Main street near Chippewa. The success of this most commendable educational venture is assured from the start, not only by the reputation and ability of the members of the Faculty, but by the actual matriculation of over thirty students. The wide-spread interest shown in the Department by inquiries and correspondence from New York, Pennsylvania and the Dominion of Canada is the best possible proof that there was an open and very inviting field in Western New York for a high-class school of dentistry.

The University of Buffalo is growing steadily and healthfully in response to the needs of the community. Its development has been slow, but sure, and there have been no steps backward in its career. There are now four departments or professional schools in successful operation ; the departments of Medicine, Pharmacy, Law and Dentistry. A school of Veterinary Surgery may be added in the near future. The policy of the Council of the University has been consistent and intelligent, rather than ambitious. It has sought the gradual establishment in Buffalo of faculties for first rate professional education, but has declined rivalry with the multitude of colleges which already afford ample opportunities for classical and general scientific instruction. It is quite within the possibilities, however, that a department will be organized under the charter of the University some day, not as a regular college with a complete curriculum, but as a secondary school—a preparatory school to serve as a feeder to the numerous and well-equipped universities that already fill the larger field.

In any event, it is evident that the University of Buffalo is to be the educational center in this city and that it is now moving more rapidly than heretofore along the lines of its most useful growth. An honorable and beneficent career is before it. The beautiful Medical College on High street and the opening of the Department of Dentistry last night are evidences of its vigorous vitality.—Leading Editorial, *Buffalo Commercial.*

A NEW PLAN.

It has been found impossible to have all our papers ready for publication, for some months after the meeting at which they are read. Some contributors are dilatory, the preparation of the cuts often consumes much time, and the net result is, that the entire volume is delayed till the last item is complete. This has been a serious disadvantage, the volume has lost some of its freshness thereby, and important papers have appeared first in other journals, which is a loss of credit to the society. In order to avoid these objections to the present plan, it has been decided to publish the proceedings in four parts, the first of which will appear October 1st, to contain the minutes of the meeting, the annual address, and such papers as may be ready, and the other parts to contain the remaining papers, and such other matter as it may deemed advisable to publish, at intervals of three months.—*Secretary Am. Micro. Society.*

SKELETON PLATES—ARTICULATIONS FOR BRIDGES AND CROWNS—IMPRESSSIONS.

Dr. Turner : There is one other point that I will allude to in line with the suggestion of Dr. Thompson, in regard to these skeleton plates. A short time ago I received a cut from an acquaintance of mine, Dr. MacHenry, of Mississippi, who suggested the idea,—and he has some cuts which I do not happen to have,—of making skeleton plates for partial sets of teeth by the novel method of inserting a pin on the palatine surface of the molar or bicuspid, and utilizing that to lock his plate in the mouth. To illustrate,—as I understand, he takes his impression, adding at the points where he proposes to lock his plate, a plate of gold. When he has adjusted the plate as accurately as possible, he drills a hole on the palatine surface, through the bicuspid or molar, as the case may be, and he so shapes the head of the pin that the plate gives way a bit and springs into place, and this knob of gold, or pin, that I have mentioned, holds the plate in position. Of course he suggests this simply for partial plates, and I just give it to you as something entirely new to me.

Dr. Morgan : Several points suggested themselves to me as the gentlemen were debating. I can not get my patients to let me trim their crowns to the form of a cone ; I parallel the sides as near as I can. I differ somewhat from our friend, Dr. Thompson, in his method of getting a proper articulation ; I think that it is one of the points that has bothered the profession more than any other. I finish my crowns before I take the impression. I adjust the crowns so that when the intervening teeth, the skeleton crowns, are attached, there will be very little finishing to be done. When soldered together you will find it very difficult to finish them. The crowns being finished, they are placed in position, an impression taken in plaster with the crowns in place, the impression removed and the crowns inserted, and a model of the clay run. An impression of the upper teeth is taken, and of the under teeth around to the cuspid on the opposite side. Then I take an impression in modeling compound of the antagonizing teeth, and while I am holding this in place I take the impression as I did below, of the posterior around to the cuspids on the opposite side, chilling the modeling compound with ice water. For many years I had a great distaste for modeling compound, simply because I did not know how to work it. I work it quite soft, pressing it to place so that my impression will be smooth and even ; the model is usually very pretty to look at.

From the mouth I get a proper articulation, when the model of fire clay and the model from my impression are adjusted on the articulator. Having thoroughly familiarized one's self with the appearance of the articulation, he gets what to my mind is the most accurate arrangement possible.

My crowns I stamp as you all do. I regard it very unsafe to attempt to adjust teeth in the mouth and remove and carry them to the modeling room. I do not want full, free occlusion, for, as we all know, in setting bridge work and single crowns they are nearly always too high. A few years ago a case presented to me in the mouth of a student in our institution, and I was asked what should be done with it. An enthusiastic young man wanted to make some bridge work The teeth were in a dilapidated condition, and I said, "I believe we may utter a sentence here, axiomatic in its character, which concerns our profession; 'crown the dead and fill the living.'" Whenever you have a tooth that you desire to preserve, whether it is anterior or posterior, if it is possible to introduce a gold filling, that is what should be done. If there is any danger of death of the tooth then I insert a gold crown. I have inserted both Logan and Richmond crowns; for the anterior teeth I prefer a Richmond crown; but I want to utter my sentiment in favor of the Logan crown when scientifically and properly adjusted.

I dislike the appearance of gold in the anterior portion of the mouth; back of the cuspid I prefer all-gold crowns.

Dr. Alexander: I am afraid I placed myself on record as saying that I did all my crown and bridge work directly within the mouth. I should have said all my bands for crown and bridge work were adjusted within the mouth. My method, which I think the best I have ever seen for getting the proper occlusion after the crown abutments are made for a bridge, is to take an impression of the parts in modeling compound. After thoroughly cooling the same by throwing ice water upon its surface, it is removed from the mouth; that part of the impression which contains the gold crowns is filled with marble dust and plaster, and after this becomes hard it is trimmed and oiled; this facilitates its removal from the plaster when the bridge is ready for soldering. The occluding surface is now run with plaster and the piece adjusted upon an articulator. You will find upon removing the modeling composition that the occlusion thus obtained is perfect. After I take the impression the work is never returned to the mouth until it is given a finish.

Dr. Thompson: I do not want to be misunderstood; I simply described the making of the bridge for the bicuspids. My method of mounting the Logan crown is with a gold ferule. I prepare the root and fit the ferule accurately to it, allowing it to extend above the end of the root. Then after the ferule is accurately fitted, I remove it and fit my Logan crown as accurately as possible to the root; then I replace my ferule and put my porcelain crown within this ferule. I think the Logan crown is stronger than the Richmond crown.—*Southern Dental Journal.*

THE

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AMERICAN ASSOCIATION'S OFFICERS.

The election of officers resulted as follows: J. D. Patterson, Kansas City, president, J. Y. Crawford, Nashville, Tenn., first vice-president; S. C. G. Watkins, Mont Clair, N. J., second vice-president; Fred A. Levy, Orange, N. J., corresponding secretary; George H. Cushing, Chicago, recording secretary; A. H. Fulier, St. Louis, treasurer: W. W. Walker and S. G. Perry, New York, and D. N. McQuillen, Philadelphia, members of the executive committee.

SIXTH, SEVENTH AND EIGHTH UNION MEETING AT BINGHAMTON.

Issueing the ODONTOGRAPHIC the 15th instead of the 1st of the month has certain advantages, one of which happens to be the ability to announce the official program of the meeting of the above societies the 25th, 26th and 27th inst. President McCall of the Sixth will sit in the principal chair, and with the assistance of Presidents White and Hayes, of the Seventh and Eighth respectively, keep order and engineer affairs generally. Vice President Smith, of Cortland, will deliver the annual address; Anchorage of gold fillings, will be discussed by Dr. Palmer, Syracuse; Our joint dental meetings and the expense account, by Dr. Stainton, Buffalo; The advantages of nitrate of silver in dental practice, by Dr. Holmes, Morrisville; The effect of food on the teeth of animals, by Dr. Howard, Rochester; Education, by Dr. Burkhart, Batavia; Gleanings from the journals, by Dr. Downs, Owego; (Subject to be announced) by Dr. W. W. Coon, Alfred Centre; Tips, by Dr.

Burkhart, Dansville; Dental chemistry, by Dr. Jewell, Richfield Springs. Clinics will be given demonstrating Method of making and inserting porcelain inlays, by Dr. Sharp, Binghamton; New methods in crown and bridge work, by Dr. Melotte, Ithaca; The Morris process for elastic rubber dentures, by Dr. Greene, Geneva; Refinishing and polishing enamel of badly pitted teeth, by Dr. Osgood, Bath; Chloride of methyl, by Dr. Low, Buffalo; Immediate extirpaion of pulp, by Dr. Boswell, Buffalo.

THEY COMPLETE THE OUTFIT.

Mr. Willet F. Mosher is assistant to Prof. Hill in Chemistry in the Buffalo University. He has served as instructor in chemistry in both Medical and Pharmacal departments, and is a graduate of the latter—a Ph. G. of that school. He has given special attention to metallurgy, and will lecture on that and dental chemistry throughout the course.

Dr. George J. Frey, Demonstrator of Operative Dentistry, is a graduate of The University of Pennsylvania, class of '91. Immediately after grauating he went to France, where he practiced in Lyons, with Dr. Quintero, a graduate of the Philadelphia Dental College, and dentist of repute. He is a young man of unusual ability as an operator, and has had experience more than sufficient to qualify him for his present duties. He is an excellent crown and bridge worker.

Dr. H. B. Meade is a graduate of the Chicago College of Dental Surgery, his junior course having been taken at Cincinnati. He has made a special study of prosthetic dentistry, and has recently added to his other acquirements Haskell's post-graduate school course of instruction and training in continuous gum work.

HOW COULD THEY KNOW?

Since the conferring of two honorary degrees of Doctor of Dental Surgery by the University of Buffalo, the question has been asked:—How could the University people know that they were thus dignifying thoroughly qualified men? The answer to this is that outside there standing with the general public, the dental profession of New York, the dental and medical professions of Buffalo, these gentlemen held the highest certificate of qualification for dental practice possible in the State of New York—the "M. D. S." of our examining board. The "D. D. S." of the N. Y. College of Dentistry is the only diploma of equal legal standing in this State, and even this must be certified to by the local State censor before the holder can get his name on the county clerk's book of registry. The diplomas of certain other institutions may rate higher than those recognized by our State law, but certain formalities must be complied with before even the best of these can be made to meet the requirements essential to the lawful beginning of dental practice in this State, one of which is the certification by the State board that the diploma in question is from an institution recognized by the State society as "reputable."

This seems to answer this supposed-to-be-all-searching question completely. For the University people to have gone beyond the "M. D. S." and all it comprehends in this State would have been worse than folly. What was done was well done, and all true friends of the institution and the gentlemen it honored are justly proud of both.

FLOWN.

Dr. Watson, formerly of Canandaigua, but now with Dr. Sylvester, of Berlin, made a flying visit in August to his old home and friends. The young lady who took return passage with him has no further use for her maiden name.

PELLETS.

Try saturated solution of sulphate of zinc with the oxide of the ordinary packet.

"Your profession, Doctor, actually compells respect—especially when one is in your chair."

A review with the title of *The Odontoskop* has appeared in Buda-Pesth, the first ever printed in the Hungarian idiom.

To remove teeth from a rubber plate, lay it teeth down on a piece of asbestos board, then hold the board over a flame till the rubber softens.

Some one has said that equal parts of castor oil and coal oil, colored with aniline red, make an excellent parting compound for plaster impressions.

With patients to whom chlora-percha is disagreeable, use tincture of benzoin. It answers the purpose almost equally well in cavities of decay and roots.

Microscopist—Did you ever look at a thousand-dollar bill through a microscope? Impecunious Friend—No; always used a telescope! —*Chicago News Record.*

The National Board of Dental Examiners at the same place and date also restored the American College of Dental Surgery to the list of reputable Dental Colleges.

She.—"Horrors! Here's an account of a woman selling her baby for ten cents."

He.—"Perhaps it was teething."

Mrs. Softly.—"The baby's cross because he's cutting his teeth."

Mr. Crustly.—"Is it possible! Now, I thought it was his teeth cutting the baby that made him cross."

Allantiasis is both Greek and scientific for sausage poisoning. Wherefore it behooves one to beware of the sausage, and especially the succulent dog sausage known as "little boy."

To flexo-ize a Froid file, immerse it in any heavy oil, burning off the same in a Bunsen flame as one would in tempering light steel springs. Pumice applied by means of a brush restores the color.

For the use of the cut to illustrate the "Continuity of Protoplasm" we are indebted to Chas. W. Smiley, Washington, D. C., publisher and editor of the *American Monthly Microscopical Journal.*

The Union Meeting of the sixth, seventh and eighth district societies will be held at Binghamton the 27th, 28th and 29th of October. A good programme is promised by the business committee.

By unanimous vote of the National Association of Dental Faculties held at Niagara Falls, August 2d, 1892, the American College of Dental Surgery of Chicago was reinstated to full membership in the Association.

The United States Food Exposition opened October 1st, and will continue till October 27th. Why not take in the last few days finishing at Binghamton with the union meeting of the Western New York district societies?

In answer to Jefferson Davis' question—"What do you mean by the laboring classes?" Andrew Johnson promptly replied—"Those who earn their bread by the sweat of their face, and not by fatiguing their ingenuity." Go to, dentist.

The Eastman Company of Rochester has reproduced upwards of 700 pictures for the State department's exhibit at the World's Fair. Between 50 and 60 of them are portraits of Columbus, and there is not a duplicate in the lot. The bromide process played an essential part in the work.

The next meeting of the Northern Ohio dental association will be held at Akron, the first Tuesday of May, 1893. The newly elected officers are: W. H. Whitslar, Cleveland, Pres.; S. B. Dewey, Cleveland, Vice-Pres.; H. Barnes, Cleveland, Cor. Sec.; L. P. Bethel, Kent, Rec. Sec.; Chas. Buffett, Cleveland, Treas.

To bury the normal amount of Jumbo's tusks in the dummy that now wears his skin was justly regarded an unpardonable waste of good material, wherefore this dental tissue was handed over to the Power's hotel *Chef*, who very quickly converted it into "Soup de Jumbo," to the delectation of the favored few who sat down to the feast.

Most men are at least one kind of fool, but if there is any man more kinds than one he is the man who puts a good cork half its length into the neck of a bottle and then cuts the cork off. And we have known men who put up phosphoric acid to do this unseemly thing. Henceforth let them be—well, anathma! that is, if they repeat it.

Sniff.—"Good many young fellows around here wearing bandages. Convalescents?"

Snuff.—"Bandages! Why, man, those are sashes. It's the style."

Sniff.—"Whew! But just the same they all look as if they had escaped recent confinement."

For Exchange.—A subscriber will give volumes I. and II. (1884–5), *Pennsylvania Journal of Dental Science*, (both volumes bound as one); also volumes XV. and XVI. (1873–4), *Dental Cosmos*, (also bound as one), plainly but substantially bound, slightly shelfworn, in exchange for corresponding volumes unbound. Address the publisher of the ODONTOGRAPHIC JOURNAL.

"Your name, please," said the President at a recent dental meeting to a would-be discusser?

"At home I'm called Mac James; but here I presume I'd be called a crank!"

"Your word ought to be good for it; but out of respect for the surroundings we'll recognize you by your first name."

If prevention be better than cure, then to found a great public bath would confer a grander blessing than to erect a hospital. To provide an institution which should bring refreshment and vigor to the overworked, healing to the sufferer, warmth, comfort and self-respect to the victim of squalor, poverty and neglect would be to raise a cenotaph more glorious

"Than ever from attic or Etruscan lands arose"—*Health Bulletin.*

For the quarter ending October 1st our dental exchanges have contributed more typographical errors and generally bad editiorial work than for any like period for some years past. Until this installment we had thought the ODONTOGRAPHIC the only dental periodical capable of such work, but now we know the staid old monthlies to have just such spells, and their overseers are not obliged to do duty "o'nights and Sundays" either. Perhaps the dog days of July and August may be made to account for the trouble.

In a chat with Dr. Southwick, of Buffalo, on vulcanizing, he said his rule was to vulcanize repairs and small partial plates one hour at two hundred and ninty-five degrees, and full dentures three hours and fifteen minutes at two hundred and seventy-five degrees. Four hours at two hundred and fifty degrees gave even better results. Given rubber of good quality time and temperature determined the excellence of the product as vulcanite. His rule was, low temperature and long time. Dr. Southwick's results speak loudly for his method.

During the late meeting of the American Association for the Advancement of Science the facetious member visited with others the department of human anatomy of Ward's natural science establishment, and slyly amplified a number of labels on specimens and boxes. A series of juvenile Indian skulls was marked "Good Indians;" spiders, "No flies on us;" a box containing a female skeleton, "A woman in the case." As to the fate of the F. M., like the elephant and the whale he now has a maceration tub all to himself.

The management of the American Postal Microscopical Club announces that Dr. S. G. Shanks, of 547 Clinton avenue, Albany, N. Y., has consented to assume the office of Secretary of the club, which has unavoidably been vacant for some time past. He will take charge of the department of slides and their circulation; and all communications pertaining thereto should hereafter be sent directly to him. Dr. Shanks has contributed liberally indeed to the pleasure and profit of the club membership both in first-class preparations and descriptive matter, the latter not infrequently accompanied by finely executed drawings.

Frequent complaint is made that members of the various societies do not read with sufficient distinctness when giving their papers. Said one prominent scientist yesterday who had persuaded a member to read more clearly: "It seems to be the fad to read these papers as indistinctly as possible. Members have come to me and said: 'I didn't hear a word of that paper. What was it about?'" In a convention so distinctly for the purpose of disseminating knowledge it seems a pity that members should have so thoroughly exhausted themselves in preparing papers that they have not left sufficient energy to properly read them.—*Report of meeting of American Society for the Advancement of Science.*

We once heard a dentist so read that he could be heard half way down the hall, and it was not much of a hall at that.

Dr. Geo. B. Snow says in a recent letter:—

"I find black rubber a rather treacherous material to work by the directions I have given. I have had what for lack of a better name I shall call 'blow-holes,' when I am certain the case was well packed. I finally hit upon the plan of not fully closing the flask—interposing strips of thin metal of a thickness I thought sufficient to compensate for shrinkage. As the rubber expands in heating to 320, some of it is forced into the gateways, and a constant pressure is thus exerted upon the contents of the flask until vulcanization and its cousequent shrinkage begins. At the proper time, the vulcanizer is opened and the pieces withdrawn, and the case re-heated to allow the flask to close. This puts the rubber into the same condition as in the usual practice, until after vulcanization is nearly completed."

A pamphlet on the "new process" of vulcanizing, embodying the above in working detail, may be looked for in the near future.

At the Eighth annual meeting of State boards of health, at Lansing, Mich., nearly one whole session was devoted to the consideration of the following questions, proposed by the Provincial Board of Ontario :

(a) Has inter-State and International action to prevent the sewage pollution of streams become a necessity ?

(b) If so, what steps are practicable for bringing about conjoint action ?

(c) What practical methods are available for preventing such pollution ?

Dr. Benjamin Lee, of Philadelphia, Pa., read a very elaborate paper discussing each question, and was followed by Dr. P. H. Bryce, of Toronto, in another carefully prepared treatise. Both led to the conclusion that river pollution was becoming so prevalent that either rivers must be altogether abandoned as sources of water supply or else very stringent and co-operative measures must be speedily adopted to prevent this pollution.

Nearly two hours were occupied by the visitors in inspecting the works (Bausch & Lomb Optical Co's.) and endeavoring to see at a glance what could not be satisfactorily seen in two days. All of the five hundred employes of the factory were at work and the tour of the various departments were extremely interesting. All questions were answered by the guides with the utmost courtsey ; the spectacled professor was enabled to see just how his spectacles were made, from the edge of the rim to the center of the lens ; the enthusiastic microscopist could verily watch his instrument grow under his eyes, from its beautiful heavy brass standard to the tiny lens against which he so often places his eye ; the photographic expert could here witness the making of all the finest apparatus which modern invention is adding to the art of photography. In fact the great building from its throbbing Corlis engine below to its classifying rooms at the top was a rare treat to the visitors and one thoroughly appreciated by them.—*Report of Meeting of American Microscopical Society.*

At the late meeting of the American Microscopical Society Prof. Gage made a brief report as chairman of the working session of the Columbian meeting of '93, in the course of which he calmly but firmly claimed the right to name his fellow committeemen himself. He would be held responsible for the success of the undertaking, and for the reason that he best knew what was needed and the men most capable of rendering the required service, their appointment should be vested in him. He put the matter so fairly and effectively that no one even thought of questioning the soundness of his position, and by vote of the society he was authorized to mature his plans and carry them out. Prof. Gage's observation, if not his experience, has undoubtedly convinced him of the undesirableness of dead weight, no matter how respectable it may be, with which as a rule committees are too often overloaded. A good man—a worker—is appointed to lead, and then anybody and everybody is made use of if for no other purpose than packing. An experienced chairman communicates with his fellows, but as a mere formality or matter of courtesy only. He goes on with his share of the work, which is usually the whole, as if an associate had never been named. Dental societies are no more free from this sort of thing than other organizations, and as a consequence they suffer in interest and instructiveness to all who attend them, and also to those who at a later date read the proceedings. Let the president or nominating committee name the chairman after consultation with him, and then empower the appointee to name his associates. This fixes the responsibility as no other method can, and assures the success.

BUFFALO CHIPS.

"Whom the Gods love they grind slowly."

"Busy people have no time for folks with a grievance, just as patrons of the turf have no interest in a losing horse."

"Papa, are you a professor?"
"Yes, my son."
"What do professors do?"
"Professors, my son, they—that is—they—they profess!"

Notwithstanding all efforts to the contrary the Buffalo dental school is on its feet. At one time the management was not certain of placing it there without calling out the militia, naval reserve, and perchance the white squadron.

The best advertised dental college this autumn is the Dental Department of the University of Buffalo. Copies of the Buffalo *Courier* began to make their way through the mail quite early in the year, and to-day that enterprising daily is very much known to the dental profession throughout the land—as also the then-in-prospect but now-in-fact school of dentistry in the zepher city—thanks to the questionable proceeding of discussing a professional matter in a lay publication. This preliminary advertising, moreover, was not at the expense of the projectors of the school; but following it up, which was done most vigorously, did call for the expenditure of much time and money, both of which were forthcoming when most needed. This service, it need hardly be said, was cheerfully rendered by those most concerned with the affairs of the school, and while regretting the necessity for it they had no choice but to take advantage of opportunities forced upon them, but for an entirely different purpose.

BOOKS, PAMPHLETS, ETC.

DENTAL JURISPRUDENCE, FOR DENTISTS AND LAWYERS. By William F. Rehfuss, D. D. S. Philadelphia: Willmington Dental Mfg. Co. Pp. 468.

Books on jurisprudence are by no means uncommon and fugitise papers on dental jurisprudence are not wholly unknown; but a treatise on the subject and at the hands of a dentist is something that few outside the author's immediate circle of dental, medical and legal friends had hardly looked for at this stage of professional growth. Dentistry has made great strides of late years in the multiplication of materials and methods, and increase in complexity and importance of processes that involve the comfort and health if not the life of those who voluntarily or of necessity commit themselves for a time to the dentist's care. The relations of dentist and patient are always professional, sometimes personal, and under ordinary circumstances differences of whatever kind are readily adjusted; but under other circumstance these differences are of such kind or degree that adjustment must be made by a legally qualified third party—in other words, a court of law. The first step that should be taken is that suggested by Gen. Butler—try the case by the rules of common sense. Having done this, consult the common law and determine if possible wherein the rules of common sense from your standpoint and the common law—which the same eminent gentleman says is simply "common sense crystallized"—agree or differ, adjusting as best you can your own findings with that consensus of opinion that cannot be far out of the way as things are now constituted. And it is just here that the would-be or perhaps would-not-be litigant will stand greatly in need of the information that Dr. Rehfuss has put in such readily accessable form—a form that will at once save both the dentist and his attorneys much time, and as a consequence the former a correspondingly valuable consideration in money.

Dental jurisprudence is defined as "that science which teaches the application of every branch of dentistry to the purposes of law," from which it is concluded that "its limits on the one hand are the requirements of the law, and on the other the whole range of dental knowledge: anatomy, physology, therapeutics, materia medica, chemistry, operative and prosthetic chemistry, etc."

This definition given, the discussion follows of what is required of the dental jurist, the dental witness, the conditions imposed by service of a subpœna, dental expert witnesses and their necessary qualifications, distinction between expert and common witnesses, the expert's field, indentification by means of the teeth, legal protection afforded by the degree of D. D. S., malpractice and its kinds, criminal and civil prosecutions of the dentist, degree of skill required, new operations still on an experimental basis, the right of juries to determine defendant's ability, the variation of standards of skill according to circumstance and localities, where life is endangered, legal differences between specialists and nonspecialists, responsibility for error of judgment, negligence, damages in cases of fracture, cocaine poisoning and alleged maladministration of anæsthetics, rape, hemorrhage, infection from unclean instruments. Compulsory service is touched upon, and at greater length expressed and implied compensation for services, the right to charge for lost time, legal rules regulating the amount of fees recoverable, liability of third party for services for the benefit of another, claims for services for married women, liability of minors, dentists' book accounts, partnership, authority and legality of State boards.

Under the head of partnership is cited at length the case of Morgan *vs.* Schuyler, as to the right of the remaining partner to use the firm name after dissolution. It interested Rochester dentists considerably at the time, both because of personal and professional relations with the parties in suit, and the persistancy with which the case was pushed from court to court till it reached, and was decided by, the court of appeals. It may be said in this connection as suggestive of changes wrought by time—and brief time too—that Dr. Morgan is dead, also his attorney, the late Judge Morgan, also Mr. Cochrane, who so faithfully looked after the interests of Dr. Schuyler.

Patent rights forms an interesting part of the work, and under this head is treated the jurisprudence of dental patents, the legal definition and classification of dental operations—surgical, surgical-mechanical, and mechanical patents granted for dental operations, which includes a number for filling teeth. Crown and bridge patents are discussed at length, and much and valuable information is imparted in regard to U. S. patent practices. The remainder of the book is devoted to the statutes regulating the practice of dentistry in the U. S., England, Canada, Italy, France, Germany, Spain, Russia, etc. These we believe are all up to date except Ohio and New York, whose dental laws have been amended since the issue of the book. It has an excellent index.

The publishers have done their part excellently well—good paper, good press work, good binding.

507 USEFUL HINTS FOR THE BUSY DENTIST. By Wm. A. Steele, D. D. S. Philadelphia: Willmington Dental Mfg. Co. Pp. 295.

This is a compilation of extracts from dental journals of practical information for the office and laboratory. Five departments are created, and an attempt made to group under the several headings a mass of material always difficult to handle because necessarily disconnected and often unclassable. The compiler has succeeded remarkably well, showing good judgment in the selection of material and the arrangement of it, at the same time furnishing an index sufficiently full to enable one to strike the fact or method wanted without unnecessary expenditure of time and trouble. It fits well as a companion book to Catching's *Compendium.*

By the way, we find one article credited to the ODONTOGRAPHIC which should have been marked as from the *Dental Record.* We think it was properly credited in this journal, but have not found time to look it up.

THE

Odontographic Journal.

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THE ADVANTAGES OF NITRATE OF SILVER IN DENTAL PRACTICE.

In presenting something of my personal experience in the use of nitrate of silver in the treatment of diseases of the teeth, it is with the hope that as the subject has been recently discussed in dental societies, by reason of the able papers of Dr. Stebbins, it has not become threadbare, and something of interest will be found in its consideration. The character and scope of the discussions that I have read on the use of nitrate of silver for the treatment of diseased teeth, have been such as to impress me with the belief that its benefits for such use are not generally understood and appreciated.

Nitrate of silver is conceded to rank as one of the most efficient and reliable remedies in medicine and surgery, and when its merits are fully known it is believed that it will be found equally efficient in the treatment of a large class of diseases of the teeth.

Take for instance decay in temporary teeth. We all know from individual experience how trying it often is to fill the teeth of small children in the ordinary way of making such operation; how they resist all efforts to excavate and fill sensitive cavities. By the use of nitrate of silver these operations are more easily made. Take approximal cavities in the posterior teeth, where the child is not too fearful and timid; cut away the walls to a V-shape, and with a piece of gutta-percha, softened by heat, of the proper size to fill the space, bring the surface to come in contact with the diseased part of the teeth in contact with powedred crystal of nitrate of silver, and carry it to the place in the tooth or teeth prepared for its reception, packing it firmly and leaving it there to be worn away by use in mastication; when that takes place, the surface of the teeth treated will be found black and hard, with no sensitiveness to the touch or to change of temperature, and they will remain so indefinitely. In case the child is so timid and fearful as to prevent this course, dry the cavity, take out such softened dentine as the patient will permit, carry the crystal on softened gutta-percha into the cavity and pack it, leaving it until such time as desirable to replace it with a more thorough operation. On removal of this filling the dentine will usually be found hard without sensitiveness, and needing but little excavation for the final filling.

I have treated diseased pulps with the nitrate-of-silver crystal very frequently since early in my practice, especially in temporary teeth, where devitalizing pulps with arsenious acid is unsafe, applying the crystal direct to the exposed pulp, usually with relief to the patient.

Nitrate of silver is a resolute remedy: it cauterizes the surface of the soft tissues to which it is applied, but does not penetrate them as does carbolic acid, nor does it involve the entire pulp in an inflammatory process, tending to destroy the whole mass, as does arsenious acid.

In case of extreme sensitiveness about the necks of the teeth at the margin of the gums, where the tendency is to softening of the tissues of the tooth, a condition very annoying to patient and troublesome to the dentist, nitrate of silver has proved more successful with me than any other remedy in checking the progress of the disease and relieving the patient. The salt may be applied directly to the sensitive part without pain to the patient. A good method that I have practiced is to cover the parts after the nitrate is applied, with a phosphate filling-material of a cream-like consistence. That hardens, and prevents the washing away of the remedy and the surrounding parts from coming in contact with the salt.

Erosion or wasting of the teeth is checked more perfectly by nitrate of silver than by any other remedy that I have ever used. The salt is applied to the affected parts, and covered with a phosphate filling to protect and retain it in place until it is firmly established in the dentine. In cases where the progress of the disease has gone so far as to require restoration by filling, this preliminary treatment is very beneficial in preventing a further waste of the tooth-substance and consequent failure of the operation.

In cases of superficial decay in soft teeth, where dark surfaces are not objectionable, nitrate of silver is very beneficial. By removing the softened portion of the tooth, polishing the surface, and rubbing the salt into the dentine, using a warm burnisher, and varnishing the parts to protect and hold the remedy until taken into the organic matter of the tooth, you will have a dense, hard surface, free from sensitiveness in mastication or change of temperature. In filling cavities in this class of teeth having an excess of organic matter, with which there is so much trouble from chemical or electro-chemical action between the walls of the cavity and the filling, an application of nitrate of silver to the walls of the cavity will effectually prevent these unfavorable results. The remedy is taken up by the dentine penetrating the surface sufficiently to prevent any such action between filling and tooth. This treatment will at times result in a darkish hue to the walls of the cavity about the filling. This I explain to the patients, that they may know that it results from the treatment and that it is a proper and favorable condition for permanency of the operation. Also in crown and bridges where the dentine is uncovered, it is beneficial to use this remedy on the teeth and roots used to sustain the bridge or crown, as a protection agains thermal change and decay. The use of nitrate of silver may be varied by applying the rubber-dam and using a strong solution of the salt, and evaporating the moisture by use of a hot-air syringe. When used in this way, a solution of soda can be applied to the parts to neutralize any acid remaining. In the class of cavities extending so far beneath the soft tissues as to render the use of the rubber-dam or matrix impracticable, and a leakage of the surrounding tissues is liable to enter the cavity while introducing the filling, and injure the permanancy of the operation, cauterizing these tissues thoroughly with nitrate of silver will effectually prevent such result.

After the diseased sockets and the deposit from the roots of the teeth art removed, nitrate of silver has proved more successful in restoring a healthy condition of the parts than any other remedy that I have used in the treatment of pyorrhea. The finely pulverized crystals may be applied to the diseased parts by the use of a small spatula of wood or of platinum; by slightly dampening the end of the instrument and applying it to the salts, it will adhere sufficiently, and is easily placed in the space between the gums and the roots of the teeth. After the remedy has been a few moments in contact with the part, it is best to rinse it with water by the use of a syringe.

In extirpation of pulps, where the pulp-canal is sensitive at or near the apex of the root, nitrate of silver crystal carried to the sensitive part and left there for a few hours usually relieves the trouble, and the canal can be filled without pain or danger of unfavorable results.

These are some of the many uses where nitrate-of-silver crystal is advantageous in dental practice. Nitrate of silver is a powerful remedy. It acts promptly, with great uniformity, and leaves its track in darkened surfaces when applied to the teeth. This should be considered, and its use governed accordingly.—HOLMES (A. M.), *Dental Cosmos.*

THE TEA AND COFFEE HABIT.

The facility with which intelligent human beings acquire poison habits is one of the anomalous physiological problems presented by modern civilization. Wherever the human race is found, if there is to be found in the same portion of the earth a drug capable of producing artificial felicity, it is certain to have votaries more or less numerous, each of whom will be loud in the praise of the marvelous virtues and the innocuous properties of the particular drug to which he is attached. The Chinaman finds his soporfic heaven in smoking the inspissated juice of the poppy. The native of the Orient undertakes to lift himself to a higher leval of artifical bliss by means of Indian hemp. The Siberian chews has mushroom, while the North American and his imitators in almost every land, in the mystic rites of smoking, chewing, snuffing, and dipping figuratively bow down to the god *nicotiana tabacum.*

Every leaf, bark, root, and seed equal to producing a temporary nerve-tickle, has been hunted out, experimented with, and utilized as a source of artifical exhilaration. So universal is this disposition, that some have ever been led to suppose it a physiological demand the gratification of which is as necessary as eating and drinking, or the supply of any natural want, The untruth of this popular notion is clearly shown, however, by the fact that the gratification of a physiological appetite is not attended by the production of disease, while a narcotic or stimulated appetite brings in its train a multitude of maladies and miseries, each peculiar to the special drug by which it has been produced. Healthful foods taken in quantities sufficient to satisfy the normal appite, are never productive of disease. This cannot be said of a single one of the felicity-producing drugs, to the use of which the human race, or any portion of it, is addicted.

But the purpose of this article is not to portray the evils arising from the long category of poison habits which human beings cultivate in different portions of the world, nor even to treat exhaustively mischiefs arising from a single one of the deceptive drugs which hold and enslave so many millions of the human race, but rather to call attention to the fact that some commonly used and little suspected drugs, notwithstanding their apparant harmlessness, carry, under cloak of a brain-soothing, a nerve-tickling power, a poison laden draft, which strikes deep into the vitals of those who seek to hide behind the care-effacing, nerve-exciting agent.

It is a fact which is pressing itself more and more emphatically upon observing physicians in all civilized countries, that the undeniable disease called "nervousness" is increasing in prevalence at a most alarming rate. This is a matter of common observation and remark. There is a decreasing number of physicians who do not believe that the apparently harmless practice of tea and coffee drinking, is in part at least, responsible for this growing depravity of nerve-cell and fiber. To prove this beyond any bossibility of cavil, to the satisfaction of every man, is a task which not one will attempt to undertake, since the complexity of the forces in operation which tend to modify or to deteriorate the human constitution under the artificial conditions of civilization, renders every problem relating to the physiological influence of habits most diffcult of solution.

That tea and coffee have a decided influence in the direction suggested, will not we think, be disputed by any intelligent, observing medical man, since evidence of a very positive character is afforded in the fact that while the influence of moderate doses, even though long continued, may be inappreciable or undiscoverable in the midst of a multitude of other possible causes, and without any morbid manifestation, it requires only a slight excess to develop the toxic properties of theine or caffeine ? And further more, it is well enough known that what might have been, for one person, a moderate dose, that is, a dose so small in quantity that its effects are not immediately observable, may be for another person sufficient to produce toxic effects.

The toxic effects of the "cup that cheers, but not inebriates," are familiar to every one as to the sleep-banishing property of a strong cup of tea. Not one would dispute for a moment, that a drug capable of producing drowsiness or sleep in a person who is not fatigued or in a condition to require sleep, must be possessed of a toxic property. Is it not quite clear that a drug capable of producing, temporarily, the most obstinate insomnia, even in a person whose physiological state is such as to demand recuperation or sleep, must be possessed of poisonous proprieties of a very positive kind ?

Lehman, the eminent German physiological chemist, unhesitatingly pronounced caffeine to be a poison, notwithstanding the claim that he, even at that day, had made it apparent, as an apology for the use of a mild norcotic, that it was a food; and the evidence that he was right, which was based upon himself and others as well, in studies of the close relation between the chemical constituents of caffeine and those of the well-known alkaloidal poison, is consequently affirmed by evidence accumulated by the experimental researches of physiologists and physiological chemists.—*Bacteriological World.*

SMUDGED GOLD.

The common method of annealing gold mats, pellets, or cylinders, by holding them over or in the flame of an alcohol lamp or Bunsen gas-burner, is a practice which, while ordinarily successful, is liable to occasion defects in the fillings.

The resulting imperfections are not often observable in flush-finished fillings, although some of these subsequently scale at marginal points on their surface ; but elaborate building or contour work not infrequently meets with most disappointing disaster, due to the smudging of the gold by the incomplete combustion of the flame-fuel. Yet the real cause of the calamity is unnoticed, and fault found with the gold, or the possible presence of a leak in the dam of other source of moisture suspected, whereas the first thought following the surprising failure should be, " The flame is at fault." Clearly one of the most important preliminaries to a gold operation should be a careful scrutiny of the annealing flame, to be sure beyond a peradventure that there is not a trace of smoke ; that the combustion is perfect. The wick of the alcohol lamp is usually too tight in its tube, and not loose enough in its assemblage of fibers to permit a free flow of the fluid fuel. Of course the appearance of a single glow-point at a fiber-end of the wick is a certain sign of smoke, and should at once be remedied. When a lower grade than 95 per cent. alcohol is used, the residual fluid after a few hours' burning becomes so watery as to lesson combustion, and cause the charring of the wick end. The sight of a blackened wick-end leaves no doubt as to the probable character of the annealing, and the operative work done by the use of that lamp.

The illuminating gas of diverse cities differs in quality, and even in the same city varies from time to time in its heat and light-giving properties ; therefore the ordinary Bunsen burner is liable to vary in its degree of combustion ; but the habit of closely observing the flame and keeping it regulated to the blue point of complete combustion, will tend to the avoidance of the risk of smudging, the main thing being to be sure that the burner is a good one. It is well to keep at hand a piece of white porcelain,—for instance, a small butter-plate,—and by occasionally holding it for a minute or two over the flame, gain an assurance of the entire absence of smoke. When the gas is of a poor quality, the impurities and the gaseous products of their combustion contaminate the gold to a degree incompatible with a perfect welding or cohesion.

The mica method of annealing is preferable, as avoiding all risk of a smudge ; but many practitioners are confirmed in the habit of flame annealing, and will probably continue to employ the means to which they have become accustomed, and which it is believed may be satisfactorily modified in the particulars herein mentioned.—How (W. S.), *Dental Cosmos.*

MECHANICAL DENTISTRY.

It is a well known fact that as soon as the student becomes initiated into the fascinations of the operating room, he seems to thoroughly despise and avoid the more plebian occupation of the work-room. Again, many students have been articled to registered practitioners, thereby fully complying with the regulations of the several colleges, yet in whose practice perhaps they have never had the opportunity of acquiring the manipulative skill and extreme nicety of touch requisite for any branch of high class dentistry.

Again, the student who comes forth from the work-room of a high class practice, in fact one who would hardly deign to soil his hands other than by the handling of the king of metals, might well be posted up in what might be called "field dentistry,"—viz:—the prompt repairing, or perhaps a better term would be patching-up, of dentures, whether metal or vulcanite. This to a certain extent would be a departure from his ordinary work, and such work might confuse him, thereby upseting him for that part of the examination in which he would shine forth in brilliant colors ; while had he devoted a *little* (mark the adjective please, gentlemen) time and study to this style of work, he would perhaps have gone through the mechanical part, at least, of his examination without a ruffling of his feathers.

As regards soldering, every student should be able to use either the mouth or foot blow-pipe. To a man who has constantly used the foot bellows, it would be extremely embarassing to have a mouth blow-pipe handed to him. It requires considerable practice to be able to keep a continuous blast on your case and to avoid missing the flame and consequent sending of a blast of cold air on the teeth, which in all probability would result in cracking two or three of them. Again, the foot blow-pipe in inexperienced hands may easily result in the sweating, not to say melting of a gold denture. As regards the soldering of gold crowns and collars, that is a luxury that not many of us have had the pleasure of revelling in. I recollect one of our esteemed professors using very unparlimentary language during this interesting performance, and I well remember the shocked expression that came over the face of the students standing round.

Cutting off a clasp, and resoldering it to the plate, I suppose all will say is very easy. I quite agree with you all, and yet how often do we not see great lumps of solder stretching from the plate to the clasp. Again, has it never occurred to any of you now present, even those fully equipped with the war paint of our profession, that after fitting a clasp you found after soldering the fit was not nearly as close as before ? What was the reason ? Either the carless handling of the plate when the clasp was only waxed, or else the cutting away of so much of the plate that the soldering caused the springing of the band slightly towards the plate. It would be impossible to even touch on all the possible mechanical things one might be asked to do in the examination, but just a remark about the malleting of a plate. To my mind too little care is given to this stage of plate striking-up. I think it is extremely hard to mallet your plate in such a manner as not to split it, especially where the palate is very high, or when the space between some standing teeth is rendered an absolute undercut by the tilting of the top of the teeth across the intervening space. Nothing else than great patience and gradual working down of the palate will prevent it splitting right across. It is best by far to get your case somewhat of a fair fit before putting it between your zinc and counter die, and even then starting your hammering with very gentle blows, constantly annealing. Like they say of a good dissector, "Half of his time should be spent sharpening his scalpel," so should a great deal of the good mechanic's time be spent in annealing his plate.

The making of metal lowers where the incisors and canines are standing is one of the most difficult things for a mechanic to do. There is nearly always a great ridge standing out at the internal alveolar edge which renders the casting of the model a very difficult, in fact an almost impossible task. I for my part always cast first what is called a core. Make the model as smooth as possible, then take some thin tin foil and cover the inside of the model, pressing the tin very closely to the plaster ; then take flour and casting sand in the proportion of 20 of flour to 100 of sand, mixing these well together the first day; then moisten the mixture to about the same extent one would ordinary casting sand, and press it well on to the model with the fingers; bury a piece of strong wire in it, leaving an end standing out at the back as a handle, if you like; then fill up to the top of the undercut only, and when this is firmly pressed together (leaving no bits overhanging) draw it out in the antero-posterior direction of the mouth, or in other words draw it out at the back, and then place the core in the oven until it is baked perfectly hard and dry. (Two or three should be made; in fact, a fresh core should be used for every zinc casting). When dry, place the core (having cut off the handle at the back perfectly level with the sand) in the model and then cast in the ordinary manner. The undercut will lift out the core when the model is taken from the sand, and it can then be removed from the plaster from behind and placed back in the sand, and then the zinc poured in. The casting when cool will require very little trimming, and the undercut will be found almost perfect. This only requires a little practice to produce an excellent model.—Parsons (D. W.) *Ohio Journal.*

COMBINING AMALGAM AND GOLD.

Our subject this evening, the combination of gold and amalgam, requires consideration of the qualities of each of the metals separately. For all ordinary cavities in teeth of good or even medium structure, gold has proved itself to be the best and most perfect filling material.

When a cavity has been properly prepared in a tooth of good structure, and the gold is well condensed, we expect the form of the filling will not change, and as long as the walls remain firm the gold will retain its possition and preserve the tooth, if a good joint is made between the gold and enamel. It is the tooth that disintegrates, if the joint becomes imperfect.

The color of gold is somewhat objectionable in the mouth, but is far superior to amalgam, as it usually retains its bright yellow, and even if it does grow dark it does not stain the tooth. But one of the best qualities of gold is its cohesiveness, which enables us to add one piece to another in such a manner as to restore the tooth which has broken down its original shape, and the place where this is most useful is in the proximate cavities of bicuspids and molars.

Those of us who attended the Illinois State Society and heard Doctor Black's paper on "Interproximate Spaces" will remember what great importance he attached to these spaces. This is a subject which is of great importance and has been very much neglected by the profession. A tooth may be plugged or stopped when the proximal face is left flat, but not filled in the proper sense of the word; many operations coming from the hands of those who stand high in the profession, show that there is almost a total disregard of this, and the shape of the teeth in some cases would remind one of saw teeth. Teeth with V shaped spaces between them are almost useless for purposes of mastication. The food wedging up against the gum is a source of great irritation, not only to the gum but to the peridental membrance and periosteum as well, causing absorption of process and gum, and frequently loss of teeth. Gold is the only material now at our command with which we can make a positive contour filling, as it is also the only material with which these spaces can be perfectly preserved. But gold acts simply as a stopping, as it has no medicinal effect upon the tooth, and if the stopping is not perfect, or the tooth is of poor structure, the gold acts as an assistant to the destroyer of tooth substance.

Some time ago Dr. Whitefield demonstrated before this society that there is an electric current between different metals when used as fillings.

Dr. Bridgman is quoted as saying that "any plug in a proximal cavity, as in the external basal area of the molars, will have the cervical edge continually wet, while the upper part may be comparatively dry. And therefore it will assume the polarized condition."

Now it is true that an electric current generated in this way may not be very strong, and would not in itself disintegrate a tooth. Neither can bacteria batter down the walls of a tooth; but Dr. Miller has demonstrated beyond a reasonable doubt that acids which are formed by chemical action caused by bacteria will deprive a tooth of its lime salts. So it has also been clearly proven that electrolysis breaks up some of the chemical compounds of the fluids of the mouth, the elements finding their way, each to its respective pole of the battery, where uniting with their affinities they form new chemical compounds, some of which are acids of sufficient strength to act upon tooth substance. Defective manipulation and defective tooth structure allowing moist dentine to act as the corroded or inferior metal of the battery accelerates the disintegration ; while dry tooth substance that is thoroughly impregnated with lime salts is a poor conductor of electricity and will resist the action of the acids, thus tending to limit the galvanic action. As the only saving quality of gold is keeping moisture and extraneous matter out of the cavity, and as it has many agencies working against it, causing repeated failure of fillings from the hands of the best operators, and so many more from the hands of others, is it any wonder that we look to some other material for the preservation of teeth of poor grade ?

Amalgam is used very largely for fillings and is saving many teeth, but at what an expense of efficiency and beauty.

It is a very difficult operation to fill teeth with amalgam. I know this is not the accepted idea, and in many cavities it is a mere matter of drill a hole and putty it up, but take the proximal cavities of bicuspids and molars and fill them so as to restore the contour, fill them so as to preserve the interdental space and morsal surfaces, build up cusps that are gone, leave no flat surfaces, but round out good points of contact, restore the tooth and keep it restored until the filling is hard, and you will prove that you possess more skill than is shown in one amalgam filling in one hundred that is inserted in the mouth.

The spheroidal tendency of amalgam destroys the usefulness of some of the most carefully inserted fillings, great crevices are found between tooth wall and the metal that in many cases cause failure, and in others are saved only by the deposit of insoluble salts around the amalgam. The oxidation of the amalgam preserves the tooth by excluding moisture, its antiseptic properties, and also as a nonconductor of thermal changes and electricity

In this brief statement we find that gold lacks some qualities which are necessary to preserve a certain class of teeth, and also that amalgam lacks many qualities necessary for the most perfect restoration of these organs. Gold has its place and should be used where it is indicated, but one of the most popular errors that has ever crept into our profession is that of using gold in all places and under all circumstances. The result of the errors of judgment in in the selection of filling materials stares us in the face continually. Gold should never be used because it is gold. The color of gold combined with the popular idea, will never save a tooth. Select your material to suit the case in hand.

Using amalgum regardless of indications or surrounding conditions is as great a mistake as the other. To scoop out a little of the decay and throw in a little amalgam is very easy, but it does not give the patient the best that can be done. It is to displace amalgam where gold is contra-indicated, that I use so largely both gold and tin and gold and amalgam in combination.

Amalgam was first used in combination with gold to repair gold fillings where decay had recurred at the cervix. This was soon followed by the use of gold upon amalgam that had previously hardened, and from this it was but a step to the use of gold upon the surface of freshly inserted amalgam.

The operation of filling with gold and amalgam has been so frequently described that it is not necessary for me to give more than a brief outline. The cavity may be prepaired as for gold, except at the neck of the tooth where it should be shaped for an amalgam filling with very slight if any grooves, and no pits. This portion may not be cut as deep, or as square, to get a good seat for the filling as for gold, tin, or gold and tin. Where the cavity extends well under the gum this is many times a great advantage.

Any of the so-called plastic golds will work with the amalgam, but Watt's crystal has proved in my hands the most satisfactory. The mercury seems to affect its working qualities very little and there is little waste.

This gold when placed upon the fresh amalgam absorbs mercury so readily that I have found that I could not depend upon the color to tell if it was thoroughly condensed, and as this is one of the most important points care should be taken that every piece is placed so it is in positive contact with the amalgam. Enough of the plastic gold should be used so the color of mercury is not seen and then the filling may be finished with any gold, giving the contour desired.

Here we have an amalgam guard to a gold filling. The first advantage gained by this is, as you can readily see, in cutting the cavity to which I have referred, ease of adaptation in cavities difficult of access, less liability to fracture margins at cervix or in very frail teeth, preservative qualities of the oxidation, in short all the saving qualities of amalgam combined with positive contour, edge strength, beauty, stability etc., of gold.

The gold and amalgam filling is a solid filling, not one filling built upon another, held by pitts and grooves, but the union is perfect, so that retention in any part of the cavity assists to retain the whole structure.

The tendency of the amalgam to assume the globular form is reduced to a minimum by gold absorbing the mercury. The absorption leaves the amalgam slightly brittle, and in finishing it is better not to burnish this part of the filling.

Electrical shocks from the meeting of different metals in the mouth are readily stopped by inserting in each filling a small piece of the metal of which the opposite is composed. This with experiments which have been made prooves that while there is galvanic action between the two metals at a short distance apart, it is imperceptible if the two metals are in perfect contact.

The color of part of the filling surely is not very desirable ; but I much prefer that the filling should be dark over part of its surface than it should be dark over all of its surface, as amalgam would be, and you will agree that the black at the cervix is far better than a recurrence of decay at that part.

If the gold should discolor, polish the gold but do not remove the oxidation from the amalgam, and you will have no further trouble.

My use of this filling is almost entirely on the proximate surfaces. I seldom see the necessity of it upon the morsal surface, as there is little advantage in this place over other combinations.—Royce (E. A.), *Dental Review.*

Dr. Freeman : I have put in perhaps ten or twenty of these fillings, and they have extended over a period of four or five years. I have never used all crystal gold. I have used Steurer's gold, but did not have firstrate success with it, and I have taken cases where I could hardly make a gold filling and have veneered the surface of them, and they remained quite well. I have often times mingled with that a little phosphate, and I am looking for results from those fillings. I cannot say that I have had enough experience to recommend the use of phosphate and amalgam highly, but I have had enough experience to recommend it as a fairly good thing. I believe it is better than all phosphate from my limited experience with it. I am here to gain knowledge, and not to impart much on this subject.

Dr. Reid : I attempted once to put in a gold and amalgam filing, and I got it about halfway in, then it all squeezed out and I quit. I went back to gold and tin, and finally filled it satisfactorily. I do not see that there is any particular advantage gained using an amalgam filling over tin and gold. I believe a tin and gold filling combined will produce equally as good a result. I am not saying this from experience because I am not experienced in the use of amalgam as Dr. Royce uses it. The amalgam filling I attempted to cope with I expect was a miserable failure, but it would not have been a success anyway. It looked well. I think the crystial gold combined with amalgam will look better than the foil, and I used crystalloid gold entirely, and have for years, and have not used anything else. I do not know whether crystalloid gold works with it nicely or not. It seems to me crystalloid gold would not work as well as Watt's crystal gold.

Dr. Pruyn: Unfortunately I did not hear all of the paper. I I think I heard enough of it to get an idea of what the essayist intended to say. I have heard him talk on a previous occasion on this subject. I have tried in one or two instances to carry out the ideas that he has advanced, but I have not succeeded for some reason. I do not know just why I have been unsuccessful, but I have failed to make the gold work. I have failed to get the gold to thoroughly unite with the amalgam, and it became a mixed up mass and did not work well in my inexperienced hands. The other method, the mechanical union of gold and amalgam, is one that has interested me considerably, but I think perhaps that is forign to the subject of the paper. If it is not I might talk a little on it. I am a thorough believer in gold and amalgam. I have practiced this method in many cases ever since I commenced to practice, putting amalgam in at one setting, and at a subsequent occasion putting on gold. Where this is done there is rapid oxidation of the amalgam, so that it becomes black like copper amalgam, and the gold remains bright and clear, and if proper pains are taken the amalgam filling is quite as good as the gold. In the worst cases, where you use such a combination, you preserve the teeth better than with either one of the metals alone. This is my belief founded on fifteen or eighteen years' experience. Doubtless many of you have seen cases that have been in my hands in former years; they have drifted into your hands. You may have seen these operations. If you have not I would like to show them to you. Take the class of teeth spoken about so persistently a few years since by Drs. Chase and Palmer, below the average in quality, they could not stand well with metal alone. If you take this combination you will have better results with it, I think, than with any other one method that can be used. The curse that was heaped upon amalgam ought not to have been upon amalgam *per se*, but upon the slovenly way in which it has been used. It is a good filling material for saving teeth. There is none better if it is used as it should be. If any of you have never filled a glass tube with amalgam, do it, with paper wrapped around it then take the paper off and see the imperfections in the filling unless ordinary care has been used. The practitioner will see air spaces where he thought the amalgam was in complete apposition. It takes no longer to fill a tooth with amalgam now than it did fifteen years ago. I have found that it needs time, it cannot be done as we were instructed to do it years ago. It cannot be done slovenly; we must use just as much care and thoroughness as with any other material, and I don't know but more. Then, we have with it a peculiar electrical condition of things that will destroy the microbes that produce decay. Amalgam does its best work at the cervical margin. Amalgam does its poorest work upon crown surfaces or angles; gold does its best work there. Take a large cavity in the distal surface of a second molar, fill it with Amalgam, but with no attenuated edges. The cavity must be prepared differently for gold. We must have good, sharp, square cut walls, otherwise the attenuated wall would be chipped down and break off. We must have a beveled surface, there you use gold to advantage, using these two metals only. Where you use one at its strongest point and where it does its best work, you do your patient better sevice than if you attempt to use gold altogether. When I do work of this kind, I do not propose to put in such fillings for $1.50 or $3.00. If necessary, I charge $10.00; I charge the patient for time. If you are doing your patients a service with amalgam that you could not do for them with gold, charge them for it just as though you were using gold.

Dr. Matteson: I have used amalgam and gold in combination frequently in repairing cervical margins, and I have had very good results following the use of them in that way. The great trouble with the use of amalgam is. in my experience, due to a lack of proper manipulation. I doubt if twenty-five per cent of practitioners who are using amalgam use it as it ought to be used. They do not follow the directions. They have not the combination that was originally made, because they make amalgam and press out parts of the alloy with the mercury in excess. It is all wrong. If the combination is correct it should be there and the mercury should be in proportion as it forms the mass If there is too much mercury, add more alloy, and *vice versa.* I believe a great majority of the failures are from a lack of manipulation. I have occasionally filled cavities (proximal) with the first half of amalgam, and gold for the remainder, for a number of years, allowing the amalgam to remain two or three days, then polishing and finishing it, then building over it with gold. I believe that there is chemical union after it has been allowed to set.

Dr. Harlan: I have filled a great many teeth by introducing amalgam first, then cutting out the next day or at some other period, a sufficient quantity and welding on with gold ; I think it is justifiable practice, but not always. I tell the patient what I do it for. I have had good results from operations of this kind, but to say that it should become a general practice would be far from what I mean. It is adapted for a certain class of cases where it is impossible to make a good firm joint between the gold and tooth structure on account of the difficulty of reaching it with gold, so that it can be thoroughly packed, and the class of teeth where there is still greater difficulty in making a perfect edge out of the quality of the material. This other method seems to me, is preferable to the one I have practiced. I shall try it. Anything that will help to save a tooth is worthy of trial, and this seems to offer a new line for experiment. You do not need to make many of these fillings before you find out what the result will be, and if it is satisfactory it will become an accepted mode of practice.

Dr. Tuller : My first experience in trying the method of filling outlined by Dr. Royce was a little peculiar. I heard him describe his method on a previous occasion, and the first opportunity I had I tried it. I put in my amalgam at the cervical margin, filled up about one-third, and commenced packing in Watt's crystal gold, and as I was packing that in I was knocking out the amalgam until I finally found the cavity was filled entirely with gold. That experience taught me that the matrix was an essential feature, and since that I have tried in several cases where it has given me a great deal of satisfaction ; but whether it will stand the test of time we will have to wait and see. It has been so satisfactory to me in a certain class of cases, as discribed by Dr. Royce, that I shall try it I think whenever such cases present ; but I am an advocate of gold wherever I can use it and make a filling that will do what we aim to do—preserve the teeth. There are some cervical borders where the best and most skillful gold workers in the profession could not, in my estimation, make as good a gold filling as could be done with amalgam.

Dr. J. Dennis: I have had no experience in this last line, but I have had the opportunity of seeing several of Dr. Royce's fillings that have been in four or five years, and all of them seem to preserve the teeth, with the exception that the walls of the teeth were frail, they were split off, leaving the gold and amalgam exposed from the crowns of the teeth to the cervical border. When I looked at the tooth, it seemed to me the walls had broken down, or the tooth had split off because of the expansion of the metal. Whether that was true or not I cannot positively say. There appeared to be a chemical union between the two metals, the gold and amalgam.

The amalgam was pitted on its surface. The proximal surface was also pitted to a certain extent on the surface next to the tooth wall. The only objection I have to the use of amalgam is, that there is an unequal degree of expansion or shrinkage in the case of the gold; that is, if very much mercury is used in the amalgam it takes up considerable gold. In the case in which the wall was split off the cervical border was perfectly preserved.

Dr. J. N. Crouse: I have not had much experience with a combination of amalgam and gold, except as I have observed them in the mouths of patients, or where a gold filling had been put in and somebody put amalgam in and patched it up. I had a mouth of that kind to-day with eight or ten amalgam fillings combined, in different teeth. From the heads the cases were in, I know why amalgam was in the teeth. In one or two instances I have gouged out some portions of amalgam fillings and added gold rather than take out all the amalgam. It is a kind of operation that I should regret to see highly recommended to beginners or practitioners in middle life or old age. It tends, I think, to slovenliness. You can put an amalgam filling in a tooth where it is not half prepared and have it look well, and the chances are that if you operate with amalgam you will not properly prepair the cavity, whereas you would if you used gold. It has a tendancy also, in my opinion, to take away the enthusiasm of the operator, that influence that every good operator must have and that fills him with encouragement, when he has done a good piece of work. When a dentist has performed a good operation he looks upon it with pleasure. One of the fascinations of operative dentistry is the beauty and perfection the operator sees after he has made a great effort. It is not only true of dentistry, but it is true of everything in which a man succeeds.

What can be the advantage of amalgam and gold combined? It has been said that it has an additional influence in that it destroys microbes. That is a very indefinate proposition. If there is anything in a combination of mercury and tin, platinum and copper fillings, of amalgam and gold, I should think it would be used exclusively for the distruction of microbes. Personally I have very little faith in such a theory or that kind of recommendation. The only good ground for the use of this combination is where the cavity passes so high up that it is impossible to get the dam above the cervical margin without inflicting a great amount of torture to the patient. You can pack amalgam quicker, and the very small amount of moisture that comes in contact with it and cervical margin will not interfere with the operation. I can see how that can be done with credit and success. Generally speaking, if the practitioners of dentistry would practice the old and first method that had merit in it, which is packing soft cylinders of noncohesive gold, they would have an operation that is more perfect as to the safety of a tooth, consume very little more time, and would have that influence that shows when you are through that you have accomplished the object that you started out to accomplish. Show me a college that teaches its pupils how to pack soft cylinders of noncohesive gold, and I would like to have a photograph of it.* If there is one in this country that does it, I do not know where it is†. It requires good judgment and self-collection to do it. You cannot pack noncohesive cylinders and talk ; you have got to have your mind on the work. If there is any better way of filling teeth than that I want to see it.

If I understood the essayist correctly, one of his reasons why amalgam is better, was, that the packing of gold took away the excess of mercury, etc. I want to say that teeth can be saved in the way described by the author of the paper, but where are the advantages ? Is it better than gold ? I challenge that proposition to any kind of test that may be brought out. If you are going to use amalgam in connection with gold, I would recommend its use in large cervical cavities where decay has taken place beyond, and in order to fill such teeth with gold properly you have got a good deal to do. It would be justifiable to pack gold with amalgam in such places. I have performed this operation, I have gouged out gold away up under the margin of the gum, and have patched it with amalgam or gutta-percha. I do not know which is the better of the two, but I should say gutta-percha.

DR. HARTT : I believe most of the gentlemen who have spoken to-night are away off. I have given up entirely the filling of large cavities with metal of any kind. A tooth of good structure should be filled with gold, and teeth below the average should be filled with cement. If we want something to hold the outside walls of the cavity togather, fill the teeth with cement, then cut out the sixteenth or eighteenth of an inch all around up to the enamel margin, and have a smooth, clean cut margin wherever the enamel and cement come together. Fill that full with gold. You cannot get up there with cylinders, a spongy mass like that. You make a little retaining point or groove, you can fill it with cement, and you will be astonished how little gold is necessary to spread over the surface to protect the cement. It is a mistake to fill teeth with metal of any kind.

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*Send your photographer to Buffalo.—CON. O. J.

†Buffalo again.

Cement is the thing, then pack over it anything you want to that is durable.

Dr. Royce: One of the first objections that I expected to hear has not been spoken of, that is the liability to mistake the color given by the amalgam at the gum margin, for decay. This may be obviated by allowing the amalgam to extend farther down upon the lingual aspect of the tooth so it is plainly visible.

In regard to noncohesive gold, I think that since I have been in Chicago, I have given more clinics to demonstraté its use, than any other man in the city. I have at the present time under observation a number of cases where the compound proximate cavities of molars biscuspids are built up entirely of noncohesive gold, the contour is such as to give fairly good points of contact, and the fillings are doing good service. I use the combination of tin and gold for a large class of cases, and I am perfectly satisfied with it in its place.

Gold and amalgam should not take the place of gold. The best operators in the country are loosing gold fillings every day, not entirely because of faulty manipulation, but in a great degree because of galvanic action. In the combination the amalgam will oxidize rapidly, stop the current, stop any minute openings, and in that way assist in saving the tooth I do not attempt to save time by its use but save the tooth that is below grade.

Crystal gold acts so nicely with mercury because it is manufactured by making a gold amalgam, and the mercury is then removed by acids, leaving the gold to be prepared for market.—*Dental Review.*

WHAT IS AN "ACQUIRED CHARACTER?"

During the discussion of an exceedingly interesting paper on the "Heredity of Acquired Characters," read before the Biological Section of the American Association for the Advancement of Science at its recent meeting, one of the members had the temerity to confess that he was not sure that he knew the exact nature of an "acquired character;" and it was noticeable that none of the noted biologists present on that occasion accepted the implied challenge by an attempt to define words that have of late been so prominently and persistently before the biological world. Doubtless most of the persons present, and honesty demands that I count myself among them, felt perfectly competent to give the desired definition; but after a resurvey of the controversy, which has of late made such an unusual demand upon the printer's ink, it has become evident to me that the meaning of "acquired character" is elastic to an amazing degree, capable of marvellous contraction or expansion to suit the individual needs of any and all controversialists, be they NeoDarwinian or NeoLamarckian.

But the contractibility of the term is the phenomenon most apt to excite the admiration of the unbiased observer. Weismann himself, the great founder and able exponent of NeoDarwinism, has demonstrated this contractibility along with his exposition of the continuity of the germ-plasm. He says :

"If every new character is said to be 'acquired,' the term at once loses its scientific value, which lies in the restricted use."——"Science has always claimed the right of taking certain expressions and applying them in a special sense, and I see no reason why it should not exercise this right in the case of the term 'acquired.'"

"It is certainly necessary to have two terms which distinguish sharply between the two chief groups of character—the primary characters which first appear in the body itself, and the secondary ones which owe their appearence to variations in the germ, however such variations may have arisen."

He calls the former acquired or "*somatogenic* and the latter "*blastogenic*" and maintains that "the *somatogenic*," characters cannot be transmitted," or, rather, that "those who assert that they can be transmitted must furnish the requisite proofs." "The *somatogenic* characters not only include the effects of mutilation, but the changes which follow from increased or diminished performance of function, and those which are directly due to nutrition and any of the other external influences which act upon the body."

Here, then, we have Prof. Weismann's definition of acquired characters which are not transmitted, and it would seem to be sufficiently definite. Now, note the process of contraction. Speaking of the source of the variation in the germ, he says :

"I believe, however, that they (the variations) can be referred to the various external influences to which the germ is exposed before the commencement of embryonic development. Hence we may fairly attribute to the adult organism influences which determine the physical development of its decendents. For the germ cells are contained in the organism, and the external influences which affect them are intimately connected with the state of the organism in which they lie hid."

Professor Weismann, by the way, concedes that a *quantitative* variation of the germ is thus brought about. " I must confess my inability to see why this variation is not *qualitative* as well."

Are not the qualities of organs and tissues affected by external conditions, such as quality of food, temperature, etc.? What justification can be found for maintaining that the germ cell is the only cell in the body not thus affected, after having admitted that quantitative effects are thus produced ? The concession of a quantitative modification of the germ cell by external conditions, acting through the same, throws the burden of proof that *qualitative modifications ara not likewise effected* entirely on the NeoDarwinian side of the controversy.

But these determining causes which " modify the phylogeny of descendents," and hence the decendants themselves, produce modifications which Professor Weismann considers " blastogenic," although expressly described as acting by external stimuli though the soma. Hence the Lamarckians cannot use any examples of the manifest of modifications brought about in this way, as, although the changes brought about are *somatogenic* by definition, they are *blastogenic* by the *a priori* NeoDarwinian argument. In other words, as soon as a somatogenic variation is inherited it is immediately relegated to the list of blastogenic variations by the NeoDarwinans.

The argument could be put in this way, according to Weismann. " The obvious means by which all inheritance of all transmitted pecularities takes place is the continuity of the germ plasm."

Any peculiarity thus inherited is blastogenic.

Ergo, any peculiarity which is inherited is blastogenic. As soon as any character, however obviously acquired, is proven by the Lamarckians to be inherited, the NeoDarwinians complacently pronounce that character blastogenic, or not acquired. And so it comes to pass that no acquired character can satisfy the requirements of the case, if that character is so unfortunate as to be transmitted.

A large number of concrete examples of this phonomenon can be found in the works of Weismann and his followers.

A cow which lost its left horn by suppuration afterwards produce two calves with a rudimentary left horn in each case. The loss of the horn would certainly be supposed to be an acquired character, but this character was transmitted to two calves, and thus becomes blastogenic to suit the argument. " The loss of the cow's horn must have arisen from a congenital malformation," and is therefore, not an acquired character. How a malformation, *due to suppuration*, can be *congenital* is a question not at all considered. The needs of the NeoDarwinian school demands that this malformation be congential, and therefore a congential malformation it is.

The young pointer dog, untrained and without any example to imitate, springs forward, barking, at the first report of a gun. "This," say the Lamarckians, "is surely the inheritance of an acquired character;" but no:—The dog has simply "inherited a reflex mechanism, which impells him to start forward on hearing a report," instead of running away at full yelp as a common cur would do.

A cat was said to have lost her tail by a cart running over it, and her progeny were tailless. This would seem to be a clincher, but "they, (the rudimentary tails) might have been transmitted from the unknown father."

A soldier looses his left eye by inflammation fifteen years before marriage, and afterwards has two sons with defective left eyes. A case of inheritance of an acquired character? Not a bit of it. "The soldier did not lose his left because it was injured, but because it was predisposed to become diseased from the beginning!"

A boy's thumbs are malformed by chilblains, associated with some skin disease. Two of his children and two grandchildren have malformed thumbs on both hands. Here we would feel reasonably certain that our search for an acquired character has been at last rewarded; but no;—"A higher degree of susceptibility of the skin of the thumb was obviously innate in the father," and this "*susceptibility*" was what was "certainly transmitted, and led to the similar malformation of the thumbs of the children."

Artificially produced epilepsy in guinea pigs was inherited by the descendants to the fifth generation, but, "it is easy to imagine that the passage of some specific organism (from the lesion made by the division of the sciatic nerve!) through the reproductive cells may take place."

"Westphal produces inheritable epilepsy by blows upon the head, and Ziegler asks if the guinea-pigs operated on "may not have been already predisposed to disease?"

But enough examples have been given to demonstrate that acquired characters, however evident they may be to all but the Neo-Darwinians, have the convenient property of becoming blastogenic, or not acquired, whenever they are proved to be transmitted.

To what, then, shall we liken an acquired character? To an unstable chemical compound, a vanishing quantity, a will-o'-the-wisp, a name to conjure with ! And the NeoLamarackians are but children chasing rainbows, which are conjured away in smiling complacency by the wise NeoDarwinians of this generation.—NUTTING (C. C.), *American Naturalist.*

THE COHESIVE PROPERTY OF GOLD : ITS CHARACTER, VALUE, AND AVAILABILITY.

Gold is one of a small group of metals which from the earliest days of metallurgic science, or even of alchemy (which was unscientific experiment), have been designated "noble" metals. They received this appellation from the fact that while they united more or less freely with other metals they were very slow to combine with non-metallic substances, and hence were always found native or in a metallic state. But while thus found, gold at least is never found pure. Its most common associate is silver, although other metals, such as tellurium, bismuth, lead, etc., are often found in combination with it in minute quantities.

In this is constituted the difference between native gold and virgin gold ; the former is always more or less alloyed as found, while the latter is gold that has been made pure by chemical action.

Gold, while possessing most of the physical characteristic common to metals possesses certain ones in a very marked degree. Among these may be mentioned especially malleability and ductility. In the former it stands preeminent, while in the latter it is excelled by but one or two metals. Its possession of these two properties in so great a degree renders it useful above all other metals for dental manipulation, while its further property of insolubility in any of the pure acids, whether vegetable or mineral, makes it especially suitable to be placed in the human mouth.

Another property which it possesses to a remarkable extent is softness, although this is implied by the previously mentioned properties, for no metal could be malleable and ductile to the extent that gold is without being exceedingly soft.

Lead is softer than gold in that it retains its softness under continued beating, while gold, similarly treated becomes stiff and hard ; but gold is far more ductile than lead.

Malleability and ductility are in all cases due to and dependent upon cohesion, which may be defined as that force which binds and holds together the ultimate constituents or particles of any solid.

Gold in its pure state possesses this property to such an extent that two masses of it under suitable conditions may be as perfectly united in their cold state as they could if fused by the aid of heat.

If two sheets of pure gold of moderate thickness, with perfectly clean surfaces, be laid one upon the other and passed between the rolls of a rolling mill, they will become so thoroughly united that no amount of force can separate them. The same result will take place between a sheet of pure gold and one of pure platinum under the same conditions. It is in this way that the crown metal so largely used today in the construction of crown and bridge work is produced.

So, too, in the process known as fibre plating, for the production of filaments from which gold lace is woven, a rod of silver is gilded by simply burnishing leaves of pure gold upon it. It is then drawn into wire so fine that a length of it extending a mile and a quarter will weigh but one ounce.

How is this perfect union brought about? Either one of two theories will account for it. One, the molecular theory, holds that while the attraction of cohesion operates upon all solid bodies, its operation is only sensible at insensible distances. When, therefore, the molecules of the same body, or of two similar bodies, are brought within the sphere of this attraction cohesion takes place.

The other, which, for want of a better name, we may call the dynamic theory, holds that the molecules of a mass or masses of matter are held together by being interlocked with one another either naturally or by being compelled to assume such a relation under the influence of pressure.

It would seem as though, in the instances cited, both the molecular and dynamic forces operated to produce this result, for union between the metals will not take place unless they are brought into the closest possible apposition, nor will it result if the metals have been hammered or rolled and not subsequently annealed. When a nugget or ingot of gold is subjected to pressure its bulk is sensibly reduced, but when heated to a point slightly below fusion its original dimensions are restored.

This latter process is known as annealing. So, also, when a mass of gold is beaten or rolled it assumes a condition of stiffness and intractability, but its original softness and plasticity are completely restored by annealing. These changes in the mass are explained by the universally conceded fact, that under the influence of pressure the molecules are driven into closer proximity than is natural to them, and that heat, by expanding the mass, allows the particles to move slightly among themselves, and resume, as nearly as may be, their former relations to one another.

Gold, after being beaten into foil, is always annealed in order to restore to it the softness which has been lost in the process of hammering. It also restores its cohesivenes. When it is desired to modify this cohesiveness the foil is simply exposed to the air for a time, and thus converted into the quality known 'as semi-cohesive. During such exposure the gold probably artracts to itself minute particles of matter, which are always found floating in the air. It is also probable that there is a condensation upon its surface of certain adventitious gases and vapors. In this way the surface becomes coated with a layer of foreign substances which modifies, and would in time entirely destroy its natural property of cohesion.

Some manufacturers of gold foil have a method of rendering it non-cohesive without exposure, and claim that, while in this condition it is as pure as the cohesive, it cannot like other preparations of foil, be made cohesive by annealing.

The process of imparting this property to pure gold is kept a secret by the few who understand it. Truly non-cohesive gold possesses the quality of softness or pliability in a remarkable degree. This it could not have without the final annealing after beating, which, in restoring the softness would also reestablish its cohesiveness. It is therefore reasonable to suppose that it is again deprived of its cohesiveness by some subsequent treatment that causes its surface to be overlaid with a film of such character as not to be readily dispelled or driven off by heat. Treating it with a solution of ferous sulphate, or exposing it to the vapors of sulphur or phosphorus, would probably produce this result, but just what process is employed we cannot say. That the treatment employed rendering foil non-cohesive is surface treatment is shown by the fact that when two superimposed sheets of this gold are cut through with a shears, the newly cut edges unite much in the same manner as cohesive gold.

The writer has seen a cavity filled with non-cohesive gold by pricking it in with two cambric needles set in wooden handles. The filling when completed was dense, and the layers of foil were so well united that they could not be separated. While nominally a non-cohesive filling, the layers were really held together by pure cohesion at the point where they were pricked, for the needle in penetrating two or more layers at a time, exposed the central cohesive portion of the layers at the point of puncture, and brought them into direct contact, resulting in union. Further evidence that non-cohesive foil has had its peculiar property imparted to it by contamination with other metallic substances is furnished by melting in the flame of an alcohol lamp a rope of cohesive and one of non-cohesive foil. The globule resulting from the cohesive foil will be bright and clean, while that from the non-cohesive will be tarnished or oxidized, clearly showing the presence of extraneous matter.

I have here in small vials globules of gold obtained by melting ropes of foil in a Bunsen flame, and catching the globules upon a glass slab as they fell. It will be noticed that those labeled non-cohesive are of a decidedly darker or duller color than the others which were obtained from cohesive and semi-cohesive foil of various makes. One vial marked "X, non-cohesive," contains globules obtained from a so-called non-cohesive gold; but this make of gold while professedly non-cohesive, is not strictly so, because moderate heat readily imparts to it the cohesive quality. The globules in this case are nearly or quite as free from oxidation as those obtained from cohesive foil, showing little, if any, surface contamination.

Non-cohesive gold has for many years been sold and used under the less distinctive name of soft gold. The latter term, however, is a misnomer, for, as we have stated, all pure gold is soft unless this property has been interfered with by hammering or rolling. No foil can possibly be softer than cohesive foil, but the misuse of the term soft has arisen from the fact that in the manipulation of non cohesive foil the layers will slide over one another without cohering, which seems to emphasize or exaggerate the impression of softness. The absence of this sliding or gliding quality in cohesive foil naturally but improperly suggests the idea of hardness. In large and accessible cavities, where no necessity exists for the sliding of gold upon gold, cohesive foil will be found to be equally as soft and tractable as the non cohesive variety.

Each kind has its special advantages as well as its definite limitations of usefulness, and harm can only result in the ignorance or violation of the conditions under which each should be used.

The benefit conferred by the discovery of the availability of the cohesive property of gold foil in dental operations can scarcely be overestimated, for while the ravages of caries were checked in a very efficient manner by the use of non-cohesive foil, that higher fulfillment of our art in the perfect restoration of lost tissue could not have been obtained without the advantage of the cohesive property. By the former method, operations could only be performed in simple cavities, and where compound cavities presented, the chisel and file were called into requisition to reduce them to simple ones. In this way not only were the natural forms of the teeth destroyed, but the amount of masticating surface reduced and much discomfort entailed. With the cohesive property of foil intelligently employed, as it is today, all these disadvantages are removed and the liability to recurrence of decay greatly lessened.

The history of the development of cohesive gold filling has been similar to that of many other valuable methods and processes. At first its disadvantages alone were seen, and not only seen but exaggerated. A quality good in itself was naturally supposed to be good under any and all conditions, and its indiscriminate employment with recognition of its limitations resulted in many failures and brought it into disrepute.

The imperfect method of its manufacture and the unintelligent manner of its employment, due to ignorance of its peculiar properties and inexperience in its use, both combined to bring about the unfortunate results with which its earlier use was attended.

Each year however has witnessed improvement in quality as well as better methods and more suitable instruments for its manipulation. so that at the present time there are fewer failures attending its use, and little excuse for those that do occur.

Used with an intelligent recognition of its peculiar properties, and under conditions in harmony with them, it has become one of our most useful servants.

In considering its value and availability, it becomes necessary to notice certain practical points both in regard to its properties and manipulation.

The term cohesive, applied as it usually is in a general way, is not sufficiently distinctive to describe the different grades of this kind of foil in use today. As now manufactured we have the moderately cohesive, better known as semi-cohesive ; the regular or ordinary cohesive ; and the extra cohesive, each differing from the others in important particulars. The former, for instance, would not be sufficiently cohesive to be used upon the surface, while the latter would be too intractable to be used anywhere but on the surface or in very large and exposed cavities.

For many years after its introduction cohesive foil was used in its most cohesive condition ; in small cavities as well as large, in inaccessible as well as accessible ones, and at the base as well as the surface. Such use was in a large measure misuse, and the many failures that followed led in time to a better understanding of its limitations. Seeing that failure occurred where it only could occur in a cohesive filling, along the line of contact between the gold and tooth substance, especially at the cervical margin, it was suggested, and came to be part of the practice with many, to line some part or all of the walls of the cavity with the more adaptable non cohesive foil, and restrict the use of the cohesive to the body and surface of the filling. The combination of the two kinds of foil in this way, using each in accordance with its peculiar advantages, resulted in a great improvement in the quality of the work produced.

With but the two kinds of foil, the strictly cohesive and the strictly non-cohesive, to choose between, such combination of the two was most wise, and continues to be considered excellent practice. One difficulty attending the method was that of manipulation, for it required considerable skill to combine the two without disturbing their relative positions; while another was that in those cases where it might become necessary, cohesive gold could not be readily added by the welding process to the non-cohesive.

With the introduction of the semi-cohesive variety an advancement was made, for it possesses the ability to be adapted to any surface as thoroughly and accurately as the non-cohesive, and also to have the quality of cohesivenes imparted to it, when needed, by the application of slight heat. In this way the one variety of gold becomes available for use in place of two varieties.

While the manufacturer of today produces cohesive foil of a far better quality than he did twenty years ago, it is still defective as a rule, in that the annealing is carried to too great a degree, thus rendering the foil less tractable than it should be. For this reason the dentist who makes large use of cohesive foil generally prefers to buy that which is only slightly cohesive, and to render it more so, when desired, by annealing it himself at the time of using. Experience has shown that the quality of cohesiveness can be imparted to foil more delicately and with a wider range of degree by the dentist than the manufacturer, for he can vary it according to his needs

There is a point in the process of annealing, well known to the experienced, which gives to the gold sufficient cohesiveness for all purposes without lessening its adaptability, whereas, if carried beyond this point its best qualities are impaired. Careful and proper annealing, therefore, is one of the most important considerations in the manipulation of cohesive foil.

The extent to which annealing may be advantageously carried depends on the thickness of the foil and the manner in which it is to be applied. In the heaviest grades of rolled gold intended to be used upon or near the surface, or, for that matter, where the entire filling is to be made from it in large and very accessible cavities, the gold may be heated to a dull red color, and the greatest degree of cohesion thus imparted to it without interference with its working properties, for it is intended to be laid layer by layer in a comparatively even and regular manner.

With the lighter grades of foil prepared in the form of twisted ropes or folded ribbons, for use in less exposed cavities and throughout the filling where the same evenness of surface cannot be maintained, so great a degree of annealing would seriously interfere with the proper working of the foil, without conferring any real advantage. It has therefore been found best to give to the lighter foil, which is used throughout the body of an ordinary filling, only a slight degree of cohesiveness, reserving the greater degree for surface work where more perfect cohesion is required. The semi-cohesive variety of foil,which does not unite upon casual contact, but will allow one sheet to glide over another without interference, and which only becomes united under pressure, is the kind best adapted for the main portion of all ordinary or medium-sized fillings. When nearing the surface, the same gold slightly annealed will give to the filling that uniformity of texture and density so necessary to usefulness.

As to the manner of annealing foil, various practices prevail ; some passing the foil through or near the naked flame, while others preferring not to expose the gold thus to the products of combustion heat it upon a tray of metal or mica held over the flame. The latter would seem to be the better way of avoiding over heating, but experience shows that equally good results follow the use of the former method provided proper care be taken. To avoid overheating by this method with the lighter grade of foils, as well as to attain the proper degree of cohesiveness without harshness, the gold should never come in direct contact with the flame, but be passed quickly just above it. There seems to be no preference between the use of alcohol or illuminating gas for annealing, provided the latter is used in connection with a Bunsen burner, affording perfect combustion.

One interesting fact remains to be mentioned in connection with the subject of annealing. For years it has been generally claimed and believed that the so-called strictly non-cohesive variety of gold could not be rendered cohesive by annealing, but the writer has recently satisfied himself by experiment of the fallacy of the idea. Annealing it in an alcohol flame of moderate size does not materially change its quality of non-cohesiveness, but when heated to redness in the larger flame of a Bunsen burner its condition becomes so greatly changed that it can be as readily and perfectly welded as cohesive gold. Treated in this way, however, it differs from the ordinary cohesive gold in the fact that pieces coming into slight contact do not cohere, and that mallet-force in some form is necessary to bring about the desired union.

Another very important feature to be considered is that of the form and character of the points used in the condensation of cohesive foil. If gold is torn or lacerated in the course of introduction additional labor and time will have to be expended in again bringing the severed portions into absolute union. It is therefore the part of wisdom to avoid such severance. This can only be done by using points with the finest and most delicate serrations upon their surface, and that are free from any sharp angles. In addition to this, the face of the instrument should be of such size as to cover considerable surface, and thus avoid piercing the different layers. As we have already shown cohesion takes place most readily and perfectly when the surfaces of the different layers are brought into absolute contact at all points. This is best accomplished by keeping the surface of the filling as nearly uniformly even as possible, and broad faced instruments should be used for this purpose.

Instrument-points with just sufficient convexity to avoid flatness and with distinctly rounded edges will produce better results than any others in welding gold.

Fine serrations, while they are unobjectionable and produce good results in connection with slow malleting, where rapid malleting can be employed, as with the mechanical or electric mallet, even more perfect results are obtained by the use of smooth points, or those with but the faintest trace of roughness upon them, Points of this character, of as large size as be conveniently employed, used in connection with cohesive gold of any form will produce a filling so compact and homogeneous that it will never scale or pit, but always preserve the perfect surface given to it at the time of finishing. A filling of this character will have not only the appearance but the essential qualities of a mass of cast gold.

The pitting and scaling of cohesive-foil fillings which have at times filled the heart of the ambitious young operator with dismay, and have been the cause of much of the opprobrium that has been cast upon the employment of cohesive gold, are attributable to one or more of three causes : too great cohesiveness of the gold ; deep serrations and finely pointed instruments ; and the use of foil so thin and delicate as to be readily torn and comminuted. Foil of greater tenuity than No. 4, as furnished under the names of corru gated, velvet, and the usual form of Wolrab gold, can only be safely manipulated in mass in the form of cylinders, mats, or rolls, and then only in connection with broad and finely serrated instruments, employed with the greatest care to prevent laceration.

The recent revival of the manufacture and use of the form of gold known as crystal, mat, or plastic gold calls for some notice of this variety before leaving our subject. The use of this form of gold for the filling of teeth dates back some thirty or forty years, and has from time to time found much favor with the profession. Its general use has not been continuous like that of foil, but it has periodically claimed attention and received recognition of its value according as some new process of manufacture or convenience of form has again brought it to the notice of the profession.

Gold thus prepared by a chemical decomposition and subsequent deposition, whether by the usual chemical processes or by electrolysis, appears as a brown powder, and consists entirely of a mass of crystals lightly interlocked. When in this condition, unlike crystalline masses of most metals, it is capable of being compressed into a solid and homogeneous mass without the aid of heat. Its purity as well as its extreme cohesiveness and softness of texture, were naturally such as to commend it to us for the filling of teeth. Such being the case, why has it failed to permanently hold its place among the forms of gold in general use? The answer is easily given. The very qualities which made it valuable led to its abuse. The ease with which it could be placed and packed in position, added to its extra cohesiveness, invited carelessness and led to failure.

Each generation of dentists has been fascinated by its attractive qualities, used it more or less extensively, met with failures, and abandoned it, only to have the same course repeated by the generation following. It has always possessed the good qualities attributed to it, and the best results have been and can be obtained with it when its peculiar properties are thoroughly understood, and when experience in its manipulation has led to overcoming the difficulties attending its use. In its loose and cohesive condition it is not only easily comminuted, but it also so readily coheres with similar masses upon mere contact that spaces are often unconsciously bridged over by it, and the resulting filling, though seemingly compact and homogeneous, is really more or less porous, and hence, faulty.

On account of its extreme delicacy and tenderness, success in its use requires that it be most carefully handled and compacted with broad-faced instruments, and that mallet force for its further condensation be not applied until each piece has been well tamped into position by hand pressure. It is further necessary that each portion be carefully and exactly placed, for once in contact its cohesiveness will prevent even the slightest change.

To manipulate it according to these conditions requires the expenditure of more time and the exercise of greater care than any other form of gold, and for these reasons its use has from time to time been abandoned by the busy practitioner.

In conclusion, we may be allowed to express the opinion that, in spite of its many good qualities, its employment by the inexperienced is always attended with danger, and that all in all, in a practical way, it possesses no advantage over the many other forms of cohesive gold now in use.—GUILFORD (PROF. S. H.), *Dental Cosmos.*

SCHOOLING IN NEW ENGLAND.

The Association of Colleges in New England is taking a good step in its discussion of the following proposed charges in the courses of study in the grammar schools :

1. The introduction of elementary natural history into the earlier years of the program as a substantial subject, to be taught by demonstrations and practical exercises rather than from books.
2. The introduction of elementary physics into the later years of the program as a substantial subject, to be taught by the experimental or laboratory method, and to include exact weighing and measuring by the pupils themselves.
3. The introduction of elementary algebra at an age not later then twelve years.
4. The introduction of elementary plane geometry at an age not later than thirteen years.
5. The offering of the opportunity to study French, German or Latin, or any two of these languages from and after the age of ten years.

As it has been in the past the whole course of instruction in the much-praised New England common school has been such as to repress the individuality and to discourage the observational powers of the pupil. The curriculum has apparently been devised to teach a lot of difficult arithmetical puzzels of no practical value and to encumber the young minds with a lot of abstruse grammatical rules which they must learn, parrot-like, but which they cannot understand until they are more mature. So to gain time for these new subjects, surely as valuable to the ordinary person as cube root or the rules of prosody and the definition of " a conditional, subjective, dependent sentence," it is proposed to take from the time usually allotted to arithmetic, geography, and grammar.

That the change will be made without considerable opposition is not to be expected, for the present teachers of our grammar schools are not prepared to teach by the observational method. Were it merely demanded that the instructor should hear the students repeat by rote the statements in some trashy "Fourteen Weeks" text book, there would be little trouble. They could handle that as they do the drunkard-stomach physiology; but experimental work demands more training and more brains. The new curriculum demands better trained teachers, it provides more practical information for the student; and when we remember that the majority of our children leave their school behind at the close of the grammar school grade, the necessity of some such change as that here outlined is self evident.

The subject of increase in the scope of our lower schools is attractive, and when upon it one scarcely knows where to stop. Custom and incompetency have forced so many things upon us and inertia so maintains them as they are that a change is a matter of the greatest difficulty. Yet every one who has studied carefully even the so-called pattern schools of the larger cities of Massachusetts sees that they occupy an enormous amount of time with ridiculously small results. They regard the infantile mind as so much plastic material which must be pressed into a conventional mold and the time necessary for this shaping is regulated by that of the dullest intellects. The children are drilled in the spelling of words like phthisic, and eleemosynary, which they will never have occasion to use until they arrive at years of maturity, and they are kept at the simple problems of addition and multiplication until they are perfect in them, utterly regareless of the fact that this perfection is to be obtained only through practice, and that this practice is to be had in abundance in all the subsequent arithmetical work. Time enough can be gained right here for the insertion of some observational science without the omission of a single useful principal or fact.

Whether it is actually so, or whether it is one of the fictions of our national pride, we are given to regard the United States as intellectually the equal of any other nation, but it is a mortifying fact that when we compare our children with those of an equal age trained in the schools of Germany and France ours are the suffers. These foreigners know more things and know them more thoroughly. They have at the close of the grammar school grade, not only a knowledge of the "three R's," but they have a grounding of at least one language, and they know besides, the elementary principles of several sciences. The writer believes that with proper instruction our children can equal them, even with our absurdly difficult orthography, and we welcome this step on the part of the Association as in the right direction.—Editorial. *American Naturalist.*

THE MECHANICAL EFFECTS OF USE.

Extensive study has convinced the naturalists and evolutionists of our day that the Lamarckian theory of use and disuse, or, as it is latterly called, the mechanical effects of use, have had the principal influence in the developement of tooth forms. Dr. John Ryder in his article "On the Mechanical Genesis of Tooth-Forms" (*Proc. Academy Nat. Sci.*, Phila., 1878), has elaborated and described this fully, and shown how the theory accounts most beautifully for the origin and formation of many forms of teeth, and especially of the class we are now studying. He says, "Among the Ungulata the most conclusive evidence is found of dental modification. The numerous living and extinct forms present a remarkable chain of dental forms gradually developing from the bunodont type and passing into the exclusively modified selenodont type, acquired by increasing mobility of the mandible. In Elephas and Mastodon the jaw movement is from behind forward. The molars are tuberculate in crown crests, which become obsolete from wear, and expose the transverse plates." The antero-posterior movement has developed the form which offers the greatest resistance to this movement in mastication and consequent efficiency in reducing food. The primitive form of jaw movement is that of simple opening and closing, as in the typical Carnivora. Next came the backward and forward movement, as in the Proboscidae and other primitive types, and then the lateral movements of the jaw, and finally the extensive triangular excursions of the jaw of the Ruminants and other vegetable feeders as the highest of all. The opening and closing movement is most characteristic of Dogs, Cats, Pigs, Hippopotami, Bats, Opossums, and all other bunodonts or their immediate allies. The Pigs show the first tendency to lateral movements, and have lengthened crests to oppose this movement of masticating. The Tapir presents still more lateral movement, and the Kangaroo still more. The Rhinoceros describes a much larger excursion, and the Ruminants the largest of all. In these the lateral is quite extensive, if not more so than the longitudinal movement. In all these forms there is, of course, corresponding modification of the condyle and the glenoid cavity to permit of the typical movement. Indeed, the development of the peculiar movement of each class has modified the articulation as it has the teeth. The forms of teeth result from the strains incident to mastication. Thus, in Lepus the strain is upon the inner side of the upper molar and on the outer surface of the lower molar. This leads to a peculiar straining and curving of the teeth, and a corresponding arrangement of the dental tissues, "the recurved enamel pattern of the opposing molar series simulating most closely some of the mechanical devices used by man in grinding-mills."

In *Cervus* the idea of "displacement due to strain" is shown most remarkably. There is some evidence that the premolars are acted upon from the external side as well as from the internal, which tends to keep the jaw narrowed at that point. The true molars are however acted upon from the inside on the upper and the outside on the lower jaw. This tends to spread the jaw at those points and modify the enamel pattern. The motion being lateral, the straining, both on tooth and tissues, must be very powerful. In the Giraffe the molar line of the lower series is slightly convex internally, and it has extensive lateral excursion of the mandible. The upper series is convex externally. The displacement seems to be greatest where the masticating muscles act with greatest force. In the Rodents there is a reciprocating motion which counteracts the lateral, so that displacement is not very great. In Cervus there are deep transverse valleys and cross–crests showing the persisteuce of this arrangement where the mandibular movement is entirely lateral.

"It looks as though the strains incident to mastication had pressed the cusps of the tooth flat and curved their cornus outward in the upper series and inward in the lower, by their oft repeated excursions in one direction. The flexures are modified in accordance with the various directions of the excursion forces, and the plicate layers of the dentition of the horse, and perhaps of the ox and deer, may be accounted for in the same way. The plication is greatest in a line parallel with the direction of the strain executed during mastication. Another circumstance is the greater inclination of the inner cusps of the upper molars outward and of the outer ones below inward, which is so common among selenodont ungulates.

" The mandibular apparatus of mammals mny be regarded as a lever of the third class, in which the glenoid cavity is the fulcrum, the muscular force the power, and the resistance of food to the teeth in crushing is the weight. Since the coefficient of muscular force is one hundred and four pounds to the square inch of transverse section, it is easy to surmise what would be the tendency of the force of mastication. It is not all expended in reducing food, but must react upon the structures which are subjected to the strain."

But we cannot follow this interesting subject further. Enough has been given to show the origin and the method of evolution of the remarkable and complicated structures of the molars of the herbivorous mammals. The great influence dictating this unique formation is food selection, which is so powerful in modifying the masticating apparatus of animals. In no field is the study of tooth-formation and its evolution more interesting than in that of this class, on account of the highly specialized forms that have been developed in obedience to a demand for a more effective apparatus for the reduction of refractory foods.—Thompson (A. H.), *Dental Cosoms.*

CLEANSING THE TEETH—IODINE.

Perhaps my method of cleansing is much the same as adopted by many of the gentlemen before me, yet it may not be out of order to briefly state it. Provided with sickles and scalers of various shapes and sizes, I usually commence by removing the most prominent scales of what is usually denominated, or *misnamed*, "tartar." The patient is supplied with plenty of tepid water for rinsing the mouth at frequent intervals On the bracket table before me is a glass slab, on one end of which is a small quantity of powdered pumice stone and borax, of equal parts, mixed. On the other end of the slab are several pellets of cotton about the size of a pea, and compactly rolled. A towel is pinned about the patients neck to prevent the clothing from getting soiled while rinsing the mouth, or from the powder, should any fall from the brush. With an ordinary pair of tweezers or gold carriers, I pick up a pellet of cotton and saturate it with compound tincture of iodine. With this I paint the surfaces of the teeth, three or four at a time, commencing with the incisors, and at the same time, with the fingers of my left hand, keep the lips from coming in direct contact with this application. Then with a small brush fixed in the engine and loaded with the powder, I briskly brush away the stains. Sometimes the engine brushes are rather stiff at first to work well on the broad surfaces of the superior incisors, but they lose much of their rigidity if pressed a few times against the narrower surfaces of the lower incisors. The brush is passed along from tooth to tooth, but frequently removed that the mouth may be rinsed. This process is continued until the stains entirely disappear.

After finishing with the brushes, a moose-head buff is fixed in the engine, with which I go over the teeth to give an extra polish to all surfaces it can be made to reach, and call into service, also, wedge-shaped bits of wood, floss-silk, or wood-fibre to work between them. Then, with a mouth syringe, I force tepid water through the dental interstices to clear away the debris. After this washing a careful search is made for such stray atoms of calculus as may hitherto have escaped observation, and when no more can be found, I take a finely pointed syringe filled with listerine and inject a small quantity between the teeth all around. Where the gums are congested, iodide of zinc may afterwards be applied. It is sometimes advisable for the patient to undergo a second operation; and where socket disease exists, additional and frequent after-treatment is requisite.

The employment of tincture of iodine greatly facilitates the operation of cleansing, and especially is this the case with children's teeth. It has a wonderful and almost instantaneous effect on the dark stains, combining with the latter, which are rendered so soft as to become easily removed. It also clearly defines the lines of concreted mucus, and enables the operator to readily ascertain if any traces remain undisturbed. It should be applied a number of times during the operation, or until the teeth appear quite cleanly. —FRANCIS (C. E.), *International Dental Journal.*

DR. FILLEBROWN: I was glad to hear his mention of the use of iodine as a cleanser of the teeth. This use of iodine is not so general as it should be. I once advocated its use in an article and was criticised by *The Journal of the British Dental Association.* This past year one of my patients, whose teeth I have had the care of for many years, was in Europe, and called on one of our prominent American dentists there and had her teeth cleansed. During the process she asked him if he did not use iodine. "Why no," said he; "it would ruin the teeth." The lady laughed and said that she had had it used frequently and had yet to see any harm from it. I have proved that it is not injurious. I put a tooth in a bottle containing the tincture of iodine and allowed it to remain there three or four months. I then removed the tooth and let it soak in water to remove the iodine, and then sawed the tooth completely in two. After soaking four months in the tincture of iodine, the tooth was just as sound and perfect as ever it was. If there is any member present who does not use iodine in the way described by Dr. Francis, I hope that he will try it at once, and advise his friends to do the same.

Dr. Andrews: I wish to say that I have found it excellent in removing green stains. I am in the habit of using, also, peroxide of hydrogen together with the pumice and with the iodine, and I think with those three materials you can meet any case.

Dr. Banfield: Can anyone tell me what compound forms in connection with this green stain?

Dr. Williams: It has been known for some time that iodine, followed by ammonia, would take off nitrate of silver stains I have forgotten just the chemical combination, but there is an accurate scientific reason for it.

Dr. Moffatt: Someone asked what was the combination produced by the use of iodine in removing stains. I think I can make that clear. These stains are usually produced by iron. By the application of iodine, we form the iodide of iron, which is soluble and easily removed by polishing.

President Brackett: I have been noticing our worthy member from Salem taking notes. Perhaps he will give us the benefit of his ideas.

Dr. Meriam: I like to make notes as I hear things.

Regarding the use of iodine, of course we know that it belongs with bromine and chlorine; all of the group have bleaching properties. I don't know who introduced it in dentistry; I found it in use at the Harvard Dental School in 1871.

Dr. Moffatt: If Dr. Meriam will allow me, I think the credit of introducing it is due to Dr. Thos. B. Hitchcock.

Dr. Meriam: Thank you. I think that should go on record.

"THE HERBST METHOD OF TREATING PULPS."

Dr. C. F. W. Bodecker, of New York, read a paper describing the above method at the meeting of the Dental Society of the State of New York, May 12th, 1892. The paper by Dr. Bodecker appears as the initial article in the *Cosmos* for October, and, with the illustrations accompanying it, fills some twelve pages of that journal. The methods of practice advocated by Dr. Herbst and sanctioned by his friend Dr. Bodecker certainly stamp the essay as the most remarkable production appearing in dental literature during the current year. The prominence given the article in the first dental perodical of the world naturally invites attention and criticism, for the progressive dentist naturally expects that the best thought of the profession stands mirrored in the pages of its best journals. The "method" is thus described in Dr. Bodecker's paper :

"The methods of practice observed by Dr. Herbst are as follows : If the pulp of a tooth is in such a condition that it becomes necessary to remove it, an application of cobalt, to which has been added about eight per cent of hydrochlorate of cocaine, is made to it, and covered with wax or some other temporary filling material. After two or three days the temporary filling is removed, the cavity clensed from all decay and rinsed out with water. Then, if practicable, the rubber-dam is adjusted, the cavity thoroughly disinfected, and the coronal portion of pulp is amputated by means of a large, perfectly clean, sharp, round bur, which is rapidly revolved in the hand-piece of the dental engine. The bur must be nearly as large as the coronal portion of the pulp which is to be amputated. The pulp-chamber is then to be washed out with a solution of corrosive sumblimate of the strength of one tenth of one per cent, and dried. A cylinder or a loosely rolled ball of No. 4 tin foil, as large as the cavity will admit, is now placed in the pulp chamber directly over the amputated pulp-stump, and with a revolving, smooth burnisher, which is smaller than the pulp-chamber, the tin is burnished firmly into it. In burnishing care shonld be exercised not to pass the tin directly upon the pulp-stump, but the force should be exercised more laterally. It is also necessary that the stumps to be capped in this manner be not irritated with small burs, excavators or nerve-instruments, as failure has been observed in those cases in which this was done. Dr. Herbst also advises that in case the tooth becomes sensitive to pressure after such an operation, it should be shortened a little, and the filling in the tooth not left high enough to touch the antagonizing tooth. If amalgam is employed, it is advisable to place a small particle of wax upon the tin cap and distribute it over the surface of the tin by means of the rotating burnisher. If this precaution, is neglected, the mercury of the amalgam will combined with the tin and the efficiency of the cap be destroyed.

"The theory entertained by Dr. Herbest in regard to this treatment of pulps is, that by burnishing tin or gold into the pulp-cavity he creates an absolutely air-tight covering to the root-canal, which is not obtained with other materials. Dr. Herbst claims that good results cannot be expected by the use of amalgam, cement or gutta-percha, and even tin and gold foils introduced into the pulp-chamber by the mallet system have proved to be failures. In the cases of front teeth, he employs gold foil instead of tin—as he claims, with equally good results."

The essayist goes on to say that upon examination of teeth treated in this way and afterwards extracted, that the remaining fragments of the pulps either preserve life, take "on a new life or becomes the seat of calcareous deposits," but in either case do not occasion any trouble. In conclusion, he says:

"I will state that these two specimens [which were sent to him by Dr. Herbst] *without doubt prove his treatment to be a great success* [italics ours], and one of the most valuable procedures ever discovered in dentistry. Yet I would advise my professional brethren not to practice it too hastily.

"To establish a correct theory requires more extended and careful observation than I am able to furnish at present; but if many of you will make experiments, especially in the teeth of overcrowded arches, with a view of extracting them later on, I have no doubt that we will in a comparatively short space of time be in possession of scientific facts about this method. I certainly would not advise the attempt to extract living pulps from the buccal roots of the upper molars, the mesial roots of the lower molars, or from any roots of the wisdom teeth, as in the majority of cases these roots are inaccessible.

"If, therefore, we remove the pulps from those roots which we know can be prepared easily, and treat them in the manner we have been accustomed to, but amputate and cap the others, I am certain that most dental practitioners will have more success and pleasure in the treatment of pulpless teeth than ever before."

After reading this paper the educated and scientific dentist might, we think, be excused it he doubted that what he read was a correct record, and if he believed that the type-setter and the proof-reader were in league to give a decent hearing to some bastard and slovenly dentistry. The report is true however, as proved by the onslaught given the essay in the discussion that followed.

Drs. Andrews, Black and others gave the method their unreserved condemnation. Dr. Andrews, referring to Dr. Bodecker's statement that after the cobalt destroyed the pulp new life came in some mysterious way, not only to the root, but that "*he finds the reticulum alive in the crown*," asked, "How he finds a live reticulum in a dead tooth?" and continuing, said: "*This is against all laws, either histological, physiological, pathological or simply logical.*"

In all candor, it is difficult for us to see in what this vaunted "new method" is much different from the slovenly operations of the indolent or ignorant operators everywhere, especially in England and Germany, who, on account of ignorance or indolence, have been practicing and are still practicing the method of taking out that portion of the pulp easily removed, or not taking it out at all, slapping in a filling over that which is not so easily reached, and bequeathing to their long suffering patients an irritation that will result in abscess, cysts, neuralgias, and all the train of evils that the patient, skillful American dentist has rendered impossible by his standard methods in pulp-canal treatment. This method of Dr. Herbst seems especially pernicious at the present time, because so many students now in college are apt to put credence in the undigested statements of men of reputation, as opposed to statements tried and proved to be correct, but involving more hard work. They are always looking for "easy ways" and "quick methods," without considering the risk, and such articles as that of Dr. Bodecker, because they are billowed up with microscopical specimens (which in this case probably do not prove anything) and curious dogmatical statements, make especially hard the work of the earnest teacher who is patiently laboring in the class-room to inculcate exact science and well-proved methods

ONTARIO DENTAL SOCIETY.

As Dr. McElhinney, of Ottawa, could not be present, Dr. F. J. Brown, of Port Hope, read a very interesting and instructive paper on "Electricity, its Application to Dentistry." This seemed to be rather an unfamiliar subject, as the paper provoked very little discussion.

The retiring president's address was due next,but, as he was not present, Dr. W. E. Willmott filled in the time with a paper on "Antiseptics."

Dr. Johnson (Chicago) : Was surprised to hear that quotation from Dr. Stubblefield's paper, as he had always considered hydrogen peroxide of no value when it showed an acid reaction. Always thought a neutral sample would work better. Would say nothing about aristol, as he had not used it, but of the other powder antiseptics preferred iodol. Gave a case where a very severely lacerated wound healen rapidly and satisfactorily under iodol. Very rarely used iodoform. Considered a dental office bad enough for the patients no matter how comfortably furnished and how pleasant a perfume, without making it smell worse than any drug store, with iodoform over the drawers and instruments. Impressed upon the members the great necessity for thoroughly antisepting their instruments after each patient, and recommended a solution of boro-glycerine as the best. Would warn the members to be very careful in injecting hydrogen peroxide into an abscess unless there was a free opening for the escape of the gases.

Dr. Pearson: Wanted to say something good for peroxide. Had had very satisfactory results from treating abcesses through the sinus.

Dr. McLaughlin: Tried peroxide in several cases as Dr. Pearson mentioned, and had satisfactory results from some, but others were quite unsatisfactory. These he injected with campho-phenique after the peroxide and was pleased with the result. Asked Dr. Johnson what he considered the best drug to use in cases where the pulp is not quite dead to facilitate its removal.

Dr. Johnson: Considered a solution of tannic acid in glycerine the best he had come across for that purpose.

Dr. Capon: Had experimented with aristol and cassia in cases of pyorrhœa with very satisfactory results, Would never be without campho-phenique in his office. Recommended the wire brush on the engine for cleansing burs and did not think it impaired the cutting edges in any degree.

A paper prepared and read by Dr. Stirton, of Guelph, on "Diagnosing Diseases of the Teeth," was then discussed.

Dr. Wood: Was very much pleased with the paper and little was left to be said. It showed the advancement made in dentistry in the last twenty years. Pleased such an admirable paper should be written by one of our own young practitioners. Dentists were called on to do more than the ordinary physician; he has to go beyond the present feeling of his patient. Never depends altogether on what a patient tells him; he may take their word as a foundation, but must go further, and see ahead to prevent future trouble. When a patient presents for examination, the first thing is to cleanse the teeth thoroughly, and then look carefully for caries. Removing the tartar, and polishing off the discolorations, often discloses cavities which otherwise would not be noticed, and of which the patient is ignorant. This would prevent the annoyance of the patient coming back in a few months showing a cavity, and wondering why the operator had not seen it before.

Dr. Leggo: Thought the noticing decay by the color was a very important point, and impressed the idea of polishing off any discoloration on the tooth to show any color of decay.

Dr. Callander: A dentist is supposed to know the normal state of a tooth, and when an abnormal condition presents he should be able to spot it, and then endeavor to restore it to the normal. He must be familiar with every tint and color of the normal tooth. First free from foreign deposits, and get the true shade of the tooth. Many cases of caries are due to child diseases, and generally are associated with some constitutional disturbances. Knowledge from experience is the only guide in these cases. Reading cannot do all, but we must be observant and put the observations into practice.

Dr. Beacock : Was sorry for the loss of those six teeth. Would have diagnosed them as pulp stone and treated for same. Would have tried it at any rate, and if that did not relieve the trouble, it would be time enough then to extract.

Dr. Leggo : Would like to have a discussion of the treatment of such cases, even though outside the scope of the paper. Thought it impossible to save some teeth in this condition on account of the restricted state of the root canals.

Dr. Callander : Had a case thirty years ago—a lady suffering intensely. Could see no defect in the tooth. She was determined to have it out ; he would not extract it, so she went to a physician, and had not only it but at times another and another, till every one was out, giving her temporary relief after each extraction, and in the end the pain was even worse than before any tooth was taken out. Had several cases since where pulp ossification was suspected, and on examination found to be so. Has removed as many as five nodules from one tooth, which relieved the pain.

Dr. Hipple : Would like to know any way in which he could diagnose between exostosis and pulp nodule.

Dr. Beacock : If no other cause can be found for the ache, and you suspect pulp nodule or exostosis, enquire whether it aches worse at night after the head has been lying at rest for some time and then moved from side to side for a few moments. If so, it is not likely to be exostosis, and it would be wise to drill in and see. If that relieves the pain all right, you have the tooth in place ; if it does not then you have the satisfaction of knowing you have done your best, and then and only then, would extraction be allowable.

Dr. Brown : Thought the case in question might have been a reflex action, due perhaps to some derangement of the stomach.

Dr. Kilmer : Had a case of a gentleman seventy-four years old. An intense ache in the upper left second bicuspid ; no decay ; no soreness on pressure, but if pressed over the root high up it gave intense pain, and pressure on the infraorbital foramen gave pain. Sent him to a physician for constitutional treatment. Came back in three weeks and insisted on the tooth coming out ; took it out ;

after two months the same pain. Was sure the tooth was not affected, but the trouble was due to some nerve irritation apart from the teeth. Would not extract it, so patient went to another operator and had it out; in six months just as bad as ever. Thought the cause must have been from the closure of the foramen through which the nerve passed.

Dr. Johnson: Considered the paper the best he had heard before the society. In regard to the case cited, he agreed with Dr. Beacock; was satisfied if the essayist had broken open the teeth he would have found a nodule inside. Never sent a patient to a medical man unless he could have a consultation with him before he saw the patient. In answer to Dr. Hipple's question, he would diagnose a pulp nodule by exclusion. If no caries, no tartar, no marked pain on application of heat and cold, nothing in the mouth or out to point to neuralgic pain, and the teeth solid, firm, and healthy, then nine times out of ten you would find a pulp nodule. Drill and treat; if no relief then, extract, and exostosis is sure. With regard to the mention of secondary dentine, he thought there were two kinds, either pathological or physiological. On approach of caries or irritation to the nerve there is physiological secondary dentine formed, but pulp nodules or secondary dentine growing into the pulp chamber, irregular in form, is undoubtedly pathological.

Dr. Stirton answered the criticisms in a few words, and the meeting was presented with the report of the membership and ethics committee, recommending several candidates for membership. On a ballot vote they were all elected.

Dr. Johnson invited the society to visit Chicago during the World's Fair, while the International Dental Congress was in session.

Dr. A. H. Weagant read a splendid paper on "Copper Amalgam." The discussion was opened by Dr. McLaughlin, Toronto, who considered this subject next in importance to the question of root filling. There are two kinds of persons on this subject those who will have nothing to do with copper, and those who make a hobby of it. Used it for a few months in the beginning of his practice, but gave it up. However, after some experiments with it, he began again, and the more he uses it the better he likes it. Operators are more likely to make a mistake with copper amalgam than with any other kind. There is a danger of getting it too dry, but there is one comfort in that case, because you know the filling will not be a success. Found that it will not discolor the tooth. The fact that it cups on the grinding surface shows either it is not hard enough to withstand mastication or it was not manipulated properly.

The essayist answered several questions. Numerous cases were cited both in favor and against, but the general consensus of opinion was that for certain cases there is nothing better, especially in buccal and proximate surfaces where the grinding surface is not implicated.—*Dominion Dental Journal.*

NICKEL AND ITS USES.

Considerable interest attaches to the metal nickel at the present time, principally for two reason : In the first place, experiments recently made in France, England, and America have shown that steel alloyed with a small percentage of nickel forms an alloy possessed of great strength and remarkable resisting powers. In the second place, the past few years have witnessed the discovery and initial development on a large scale of what are said to be practically inexhaustible deposits of nickle ore in what is known as the Sudbury District of Canada.

Nickel may be said to be a modern metal, for its history goes back no farther than a century and a half, although the word is much older. The origin of the name is curious and interesting. The men working in the German copper mines often came upon an ore which, though looking like copper ore, did not yield copper when smelted. Such ore they called kupfer-nickel i. e., goblin copper—because they thought the nickels or spirits of the mine were deluding them with bad ore.

In 1751 the Swedish mineralogist Cronstedt discovered a new metal, which, some three years later, he succeded in isolating in an impure state. Finding that his new metal was most abundant in kupfer-nickel, he allowed it to retain the name suggested by the old superstition of the German miners.

It was many years after this, however, before the metal was obtained in a state of purity and its properties satisfactorily determined, and it was much later still when nickel, in a state of comparative purity, became an article of commerce ; indeed, until recently it was hardly known in the pure state outside of the laboratory. In 1804, Richter experminted with this metal and obtained it fairly pure by reducing the oxide with carbon in an earthen crucible. Almost seventy years later, Wharton, of the Camden Nickel Works, Camden, N. J., who has devoted so much attention to the metallurgy of nickel, which he made by strongly compressing the spongy mass obtained by reduction of the oxide. These exhibits at Vienna, and similar ones at Philadelphia in 1876, and at Paris in 1878, received but scant attention from scientific visitors. Chemists and metallurgists, as a rule, supposed they were nickel alloy, and were somewhat incredulous when informed that the objects were pure nickel ; in fact, the commercial production of pure nickel by Wharton, as evidenced by these exhibits, was a genuine surprise to the metallurgical world.

A further advance in the metallurgy of nickel was made by Fleitmann, of Iserlohn, Westphalia, in 1879. He found that the purest nickel he could obtain on a commercial scale had a brittleness which did not belong to the pure metal, and in the course of investigation he was led to believe that the brittleness was caused by occluded carbonic oxide. He decided to attempt the removal of this by adding magnesium in minute quantities to the molten nickel, and was successful beyond expectation, for the nickel thus treated quickly loses its brittleness.

As to the properties of nickel, it will suffice to say that it is a hard silver-white metal with a steel-gray tinge ; it may be rolled into thin plate or drawn into wire ; it is not readily oxidized ; it is attracted by the magnet and readily assums a polar condition.

Turning now to consider the uses of this metal, we find that Thénard in 1825, in his Traité de Chimie, stated that nickel was not employed for any practical purpose. This statement is true only in reference to the pure metal ; for, just as brass was known and used long before zinc was isolated, so nickel alloys were known and used long before Cronstedt's discovery of the metal. The Chinese appear to have been among the earilest users of nickel alloys, for as early as 1776 it was pointed out that Chinese *packfong*—i. e., white copper—is an alloy of copper, zinc and nickel. The beginning of the manufacture of these alloys in Europe is due to a somewhat curious circumstance. In the old slags from disused coppersmelting works at Suhl in Prussian Saxony, and once known as the armory of Germany, white granules of metal were found. These were extracted and sold as Suhlion nickel silver, and in 1823 Brande showed that these white granules consisted principally of an alloy of copper and nickel, and thus originated the manufacture of the widely usued nickel alloys known as nickel or German silver. This German silver, so extensively used as the basis of electroplate, is, as is well known, an alloy of copper, zinc, and nickel, the proportions varying according to the use to which the allov is to be put. Copper is the principal ingredient, and the nickel varies according to the color desired, for it is this metal that has the property of whitening the copper. Sometimes a little iron (from two to two and a half per cent) is added to the ingredients named, with the result of producing an alloy that is whiter and harder than the ordinary composition.

Doubtless all Americans know that nickel is used in coinage, but probably few are aware of the extent to which it is so used. As early as 1837 one Dr. Feuchtwanger, of New York, called attention to the suitability of nickel for coinage, and is said to have actually issued a number of one-cent and three-cent coins made of a nickel alloy. But the first national issue of a nickel-alloy coinage was made by Switzerland in 1850, the issue consisting of twenty, ten, and five centime pieces, containing respectively fifteen, ten, and five per cent of silver, alloyed with ten parts of nickel and twelve and a half parts of zinc, copper making up the balance. In 1857 an alloy consisting of eighty-eight parts of copper and twelve of nickel was adopted by the United States for the one-cent pieces. In 1860 Belgium instituted a nickel coinage, the alloy used for the purpose consisting of seventy five-parts of copper and twenty-five of nickel. This particular alloy appears to have given much satisfaction, for we find it adopted by the United States in 1865, by Brazil in 1872, by Germany 1873, and still later by Jamaica.

It is not only in the form of an alloy that nickel is used in coinage. Improvements in the metallurgy of the metal have rendered possible a coinage of pure nickel, and it is interesting to note that Switzland, which was the first to adopt a nickel-alloy coinage. was almost the first to issue coins of the pure metal, the Swiss twenty-centime pieces coined in 1884 being pure nickel. In 1886 the Royal Berlin Mint executed for the Egyptian Government a nickel coinage, and during the same year a Birmingham firm coined in nickel five hundred thousand half-decimos and one million centimos for the republic of Ecuador, while in 1887 Bolivia issued a nickel coinage. It thus appears that nickel is gaining in favor for subsidiary coinage, and not without cause. It is superior to copper in color, and being more valuable, smaller coins are obtained ; both the pure metal and the alloy are hard and thus wear well, and they possess the additional advantage that they can be manipulated only by skillful workmen. In this connection it is worthy of note and illustrative of the old saying, "There is nothing new under the sun," that the Bactrain king Euthydemos who reigned about 235 years before Christ, is in composition very similar to the alloy adopted by Belgium, the United States, and other countries.

Nickel-plating annually calls for a large amount of the metal. The process is said to have been invented by Böttcher about 1848, and was first applied to firearms in order to prevent them from rusting, but is now applied to every description of iron and steel work. The effect, as is well known, is very fine, as the nickel, coating is white, bright, and hard, and, since it shows but very little tendency to oxidation, it retains its brightness for a long time.

Important as are the uses of the metal already indicated, the world's annual consumption has been small ; not over a thousand tons was consumed in 1888, nickel-plating calling for more than half of this amount.

It is however, in connection with one of the new uses of nickel—viz., as a constituent of nickel steel—that special interest attaches to the metal at present.

It is well known that nickel is frequently associated with iron in meteorites, and the view that the well-known and valuable qualities of meteoric iron might be due to the presence of nickel has not wanted advocates in the past.

Again, as far back as 1853, nickeliferous iron ores from Marquette, Mich., were found to produce iron possessing unusual toughness, a very white color, and a diminished liability to oxidation.

For a long time Nature's hints were neglected or disregarded, but in 1888 patents were taken out in England and France by different individuals for the prepration of nickel and steel.

Tests of this alloy have been made by competent authorities, and the effect of the addition of small persentages of nickel to steel is seen in greatly reduced tendiences to oxidation and increased strength. As an example of the superiority of this nickel steel, the following results of one of the tests may be given: A steel containing 4-7 per cent of nickel "showed an ultimate strength of thirty per cent and elastic limit of sixty to seventy per cent higher than those of mild steel, with nearly equal ductility, and the valuable quality added of less liability to corrosion." The authority who obtained these remarkable results added : "Think for a moment of this in connection with the erection of the Forth Bridge or of the Eiffel Tower. If the engineers of those stupendous structures had had at their disposal a metal of forty tons strength and twenty-eight tons elastic limit, instead of thirty tons strength and seventen tons elastic limit in the one case and, say, twenty-two tons strength and fourteen to sixteen tons elastic limit in the other, how many difficulties would have been reduced in magnitude as the weight of materials was reduced ! The Forth Bridge would have become even more light and airy, and the Tower more net like and graceful, than they are at present." And Sir Frederick Abel, in his presidental address at the Leeds meeting of the British Association, remarked, "It has been shown by Riley that a particular variety of nickel steel presents to the engineer means of nearly doubling boiler pressures without increasing weight or dimensions."

On the other hand, it must be admitted that there are those who maintain that the future of nickel steel has been painted in too rosy colers. For example, in Stahl und Eisen for October, 1889, Prof. A. Ledbeer criticises the claims made for nickel steel, and predicts that the alloys of nickel and steel "belong to that class of inventions which crop up at intervals, finally to be buried in oblivion because of their impracticability." These criticisms of this German writer were practically answered by a report in some of the trade journals immediately after the appearence of his criticism, to the effect that there existed among steel-makers a demand for several thousand tons of ferro-nickel for use in the proparation of nickel steel; and trials of armor plate made by a board of United States naval experts at Annapolis, Md., have shown that nickel steel is superior to ordinary steel for armor plate. As a result of these tests the House of Representatives at Washington made an appropriation of one milion dollars for the purchase of nickel for use in the manufacture of armor for the new armored war-ships.

Coming now to consider the source of the nickel of commerce, we find it is derived practically from two classes of ores—viz., a nickeliferous pyrrhotite and a silicate of nickel. A very remarkeable deposit of the latter occurs in New Caledonia, one of the New Hebrides and a penal colony of France, and since the period when productive work was begun on these deposits it may be said that the New Caledonia mines have entirely controled the market. The ore known as garnierite is a hydrosilicate of nickel and magnesia, and is found in beds of serpentine mixed with oxide of iron, chrome iron ore, and a little colbalt. It is especially valuable on account of its entire freedom from arsenides and sulphides. Similar ores occur on this continent—for instance, in North Carolina and Oregon—but these deposits have not been developed to any extent. This discovery of the New Caledonia deposits aroused great interest in industrial circles, as it was thought cheap nickel was thereby assured. Of late, however, the center of interest has moved from nickel silicate and New Calidonia to nickeliferous pyrrhotite and to the Sudbury District in the Canadian province of Ontario. The interest attaching to this district is due, not to the discovery of a new mineral or of nickel in a new association, if we expect the occurrence of small quantities of platinum arsenide in the Sudburry ore ; it is due to the richness of the ore and to the vast extent of the deposits.

Attention was first attracted to these by reason of the considerable masses of rich copper pyrite found close to the surface, and it was as a regon of copper ore that Sudbury first became famous. At the depth of a few feet, however, the rich copper ores were found to be underlaid by pyrrhotite, which occurres in large lensshaped deposits in an extensive belt of diorite. Scattered through the pyrrhotite is copper pyrite in threads, in mere specks, and in masses from the size of a pea to pockets containing several tons. The nickel contents of this pyrrhotite vary considerably. Scarcely any of it is entirely free from nickel, but the percentage varies from a trace to as much as eight or nine percent.

An idea of the average value of the ore, and of the amount of nickel the district is capable of affording, may be gained from the particulars of the smelting operations of one of the companies that are working in this district to the end of December, 1889. One furnace ran 259 days and produced 3,849 tons of matter, said to average thirteen per cent nickel and eighteen per cent of copper. A second furnace 73 days producing 1210 tons of matte of equal richness. In other words, 41,000 tons of ore produced matte containing 650 tons of nickel, and which was associated with 910 tons of copper, thus showing that the ore smelting averaged about one and a half per cent of nickel together with two and a quarter per cent of copper. All the nickel produced in this district finds a ready market, being used principally in the manufacture of guns and armor plate. It thus appears that the discoveries of the extensive Canadian deposits of nickel, and the valuable qualities of nickel steel, are complementary one of the other.—DONALD (J. T.), *Popular Science Monthly*.

CATCH UP AND KEEP UP.

The laggards are legion, the bright ones are few. Wake up, tumble up any way to get up, only come up and take your proper place. Then march to the music of success. It is a shame to see so much talent buried in laziness. You can do something if you try, you can do something well if you will. Yet you live from hand to mouth, unhonored and unknown. The idea of your being "a professional man," and yet not leading! Be ashamed of yourself and come to the front. Throw of your rough old clothes, your slovenly ways and your obnoxious habits. Clean yourself up, dress and look and act professionally, and come among the honored. Rub up your best ideas and get more from others. Take your stand with dignity and be somebody. You have been cooped up in that smoky, dingy dirty out-of-the-way place so long you smell bad, and look bad and are bad. There is nothing attractive about you. Shake yourself and come into the sunlight, cheer up and look happy, laugh and grow fat, show yourself a man and start anew. Burn up your old office and every thing in it, and your old self with your rum, beer and tobacco. Now with your new inspiration and esthetic appearance and taste, come where you will have good company, good pay and good cheer. You are growing musty and seedy and crabbed where you are. Better get some one to kill you, if you are still determined to be a laggard and a nuisance.—*Items of Interest.*

SOLDERING ALUMINUM.

The inventors claim that surfaces of aluminum may be successfully soldered to each other, and to other metallic surfaces, by using silver chloride as a flux in conjunction with ordinary solder.

The pieces of metal, one or both of which are aluminum, are placed in the relative position required in the joint, finely powdered fused silver chloride spread along the line of junction, and solder melted on with a blowpipe or other device. The joints are thus easily and rapidly obtained, and become perfectly hard on setting, and neither crack, flake, nor check.—*Dental Office and Laboratory.*

VISIT TO PHILADELPHIA—A CHARACTER—OTHERS.

During the Sunday which followed our meeting and entertainment, we were, in response to our invitation, the guest of Dr. Bonwill, a name none more familiarily known ; certainly none so well known in connection with inventive genius. In value of inventions taken in a collective sense he has no peer among us. Personally he is an electrical, literary scientist, certainly no common brillancy radiates from his active mind. The Dr. is richly located in a home and office at 2009 Chestnut street, the 5th Avenue of Philadelphia. He ownes the house that was given Gen. Grant by the citizens of Philadelphia. It is very complete in appointments. Hospitality with him is inborn, a product of his southern parentage, he having been born and lived until about twenty-five years since, south of Mason and Dixon's line. He is of French decent, tracing back readily his lineage to noble families. The Docter has one married daughter and one that graces his home, both brilliant and very entertaining, together with a son who graduates the coming season from the Pennsylvania university, and will be his father's successor so far as he may be able. He told me frankly that he did not inherit any of his father's inventive abilities, neither does he resemble his father, though equally as good looking. The Doctor's office is worthy of notice. It is replete with objects of interest that attract the eye of an æsthetic. These objects evidence that he has a thought of what is truly refined and uplifting. This is noteworthy in a place that is so unfortunate as to have even the undeserved distinction of being a place of all others to dread,—a dental office ; everything in the operating room emphasizes Dr. Bonwill as a busy practitioner. Every hour of our stay we studied with the closest scrutiny and saw what is always precious to us, neatness and order. His chair for operating is a unique novelty. You can only name it a dental rocking chair, which is prized above all others by him, and as we noted it in practical use, nothing could surpass it for cleverly faciliting easy and expeditious movements, and seemingly nothing could be more luxurious for the patient, and it does not cost $300. We will say here in this connection that our idea of a modern style of furnishing an office would be a very large reduction of machine exhibits. In a word, we would have a dental parlor with all that is involved in the meaning of the word. Many models of irregularity cases we saw in different stages of progress, and many simple devices were pointed out, that seemed so easy, none need to err. The Doctor emphasized his simple construction of movable bridge work which several cases in process of practical working proved, and in addition to these he allowed us to examine two pieces in his own mouth. These were a biscuspid and incisor on each side of the lower jaw. Both were difficult because of the triangular shape of the space. They can only be made plain by illustrations, which I trust the Doctor will ere long give to the profession through the journals. His latest invention of engine and mallet will be met with wonder and amazement. They will be on exhibition. He has no further use for those of his former pride. During Sunday we passed from interest to more interesting displays of the works of a genius, and truly we were oblivious to the passing hours. The Dr. carries in his hip pocket a note book in which he catches the poetic inspirations that over take him at unexpected moments, often occasioned by unexpected events. These emanations are full of vigor, pure and elevating. They are entirely worthy of a place between book covers, and I promise that will be their lot ultimately. We have dentists that can do more than look down in the mouth. Prof. Garretson is a brilliant example as all know who have perused his entertaining books outside of professional lines.

We have enumerated a variety of objects that engaged our earnest thought and much our curiosity, but we come now to name most of all, the wonderful. The Doctor has been engaged now four years in perfecting a series of geometrical drawings that emphasize and prove, we think, his views correctly of the equilateral triangle, as being the type of the human jaw. We spent some three hours going over this whole subject with the drawings before us, and truly each drawing by actual measurement proves the other. Verily, here is an example that proves that "figures do not lie." This will all be in our hands sometime, in book form. The Doctor claims that this work will prove the theory of evolution false. Whew! What will men say now? After we had gone through this higely intellectual repast, we turned to Dr. Bonwill and Dr. W. H. Dwinelle, and said, we can now value the compliment paid to Dr. Bonwill by our late friend Dr. Atkinson. Dr. Bonwill had called on Dr. Atkinson the Sunday following the Patriarch's Banquet. After Dr. Bonwill had gone, he turned to me and said, "For an understanding of mathematics in physiology, Dr. Bonwill has no peer in our calling." In passing along this deserved tribute, we feel we are again speaking timely and kind words of earned praise to one, who is like many of us, quickening the pace nearer the end of the earthly career.

The following day, Monday, we paid a hurried visit to Prof. Truman, who is a man of beauty and a joy to look upon, always dignified and genial in the fullest sense. He is another example of one that can turn his thought to profit in other lines than chair-work and teaching. His editorial work tells the tale of an honest, courageous Bishop-Episcopus-Editor. His late editorials testify to the alertness of his observation. Prof. Garretson we found as usual, genial and highly entertaining. His "words are fitly spoken." We enjoyed his review to us of his little pathological tilt with Prof. Heitzmann at the October meeting of the Odontological Society, which the *Western Dental Journal* has wisely given to its readers in the January number. It will bear attentive reading and prove profitable to any who are seeking knowledge. Editor Kirk received our card and our best wishes for a speedy release from that grim mysterious malady, *La Grippe*, that is shadowing the pathway of so many of our number. We need the culture of such fertility of brain as he is indicating in his wrstings. In Philadelphia we have a goodly heritage So many we may well take delight in honoring. During the last thirty years many noble men have fallen out of active work and left their mantle for others, who are doing work in the advancement of our calling to an altitude of valued recognition.—Mills (G. A.), *Ohio Journal.*

After extracting, hot water to rinse the mouth assists in forming a clot, and thus stopping hemorrhage; cold water prevents the formation of the clot and increases hemorrhages. And hot water is more agreeable to the patient. In spite of cold water, a clot will generally form, but it will be much weaker, and therefor, secondary hemorrhage is more likely. The first fresh blood from a wound is much the best as nature's healer, and the less it is interfered with the better. Often there is no call for even hot water, unless the mouth is rinsed with cold water.

Occasionally antiseptics may assist, but these are not usually as potent as we imagine. The pressure of the patient's finger on the part for a few minutes is generally sufficient, to assist nature in filling the cavity with clot till the torn blood-vessels close. If this simple remedy is not sufficient, plug the cavity with cotton. The idea that this must be saturated with acetate of iron is not so important, and sometimes injurious, for the coat it forms is often so tanned that it easily breaks away, causing secondary hemorrhage. If anything is used on the cotton wad, let it be cloride of zinc or nitrate of silver, or the two combined.—*Items of Interest.*

UNNECESSARY BURDENS OF THE DENTAL STUDENT.

The dental student has all he can do to pull "through," even under the most favorable circumstances. With a large proportion of the studies of the medical student, he has those pertaining especially to dentistry. To this is added the really practically part of the course, the clinical demonstrations of the infirmary and laboratory. Of the latter there is not enough to begin to furnish the necessary instructions to qualify the student for successful practice. This being the condition of things, instruction should be simplified as far as possible, so as to be readily comprehended.

Prosthetic dentistry cannot be taught in the lecture room. As a rule, too much of the student's time is taken up with details that cannot be comprehended except with an ocular demonstration in the laboratory. Not only this, but much of the instruction is of such a complicated nature as to fail to enlist the attention and interest of the student; in fact, tends to discouragement.

If the lecturer could spend half the time spent in the lecture room, in practical demonstrations in the laboratory, aided by demonstrators of long experience, instead of young and inexperienced ones, the student would graduate far better qualified to practice than under the usual règime.

There is many a graduate who can describe the anatomy of the foot, who is unable to make a successful rubber denture.

It has seemed to me that if the instruction in prosthetic dentistry could be relegated to the last month or six weeks of the term and the student, kept in the laboratory steadily at the bench, they would learn four times as much as under present methods.

These conclusions have been reached after forty-seven years experience in this specialty; seven years as lecturer in two dental colleges, and incidentally in giving clinics in three other colleges, and finally in conducting the first Post-Graduate School of Prosthetic Dentistry, with students from nearly every state in the Union, and from foreign countries. Most of these studenis were practicing dentists, many of whom were graduates of dental colleges, and all are united in saying that their month's instruction was far ahead of what they had received in college or from preceptors, in thoroughness and simplicity of method.

In text books the student is burdened with methods perplexing and unnecessary. For example, in a recent work, "Questions and Answers," I find the following pertaining to the making of dies:

1. How is the die for swaging obtained? *Ans.* By moulding the model in sand, and pouring in melted zinc.
2. What is the best sand for moulding? *Ans.* A mixture of new and old brass-moulder's sand.
3. What other moulding materials are employed? *Ans.* Marble-dust, tripoli and whiting
4. What properties should such materials possess? *Ans.* Be fine enough to copy closely and smoothly, yet course enough to permit escape of vapor.; contain clay enough to give coherence without packing too compactly.
5. How should sand be moistened? *Ans.* With enough water only to prevent its crumbling; too much water will cause sand to cling to the mould, and cause "flowing" of the metal.
6. How should sand be manipulated? *Ans.* Packed so as to give an even, firm surface, but not so compactly that vapor cannot escape when molten metal is poured into the mould.
7. What is the effect of the vapor not escaping through the sand? *Ans.* It passes through the molten metal and renders the die imperfect.

8. What may occur if metal chills on contact with surface, next to the sand, and remains molten in interior of the die ? *Ans.* The thin shell, forming surface of die, will press upward and make a defective die, without any sign of flaw on its surface.

9. What will prevent this, and also any flowing of the metal ? *Ans.* By using sand not too rich in clay, nor too fine, nor too damp, and not packed too firmly ; also by drying mould, or *mixing sand with oil or glycerine.* (Why not do this in the first place ?)

10. When may fine sands, firmly packed, be used ? *Ans.* When mould is dried and heated to temperature of 250°.

11. When mould is damp, at what temperature should the metal be poured? *Ans.* At the lowest consistent with proper fluidity.

12. What is the proportion of oil or glycerine to be used in sand ? *Ans.* One quart of oil to a peck of sand.

13. What are the objections of oil-mixed sand ? *Ans. Soiling hands and disagreeable oder !*

14. What is used to dust over surface of mould before molding ? *Ans.* Soapstone, rotten-stone, and charcoal powder.

15. How is sand mould for a die made ? *Ans.* The model is placed on flat surface or moulding bench, with face up and heel toward operator ; over it the moulding flask is placed ; a small quantity of sand is sifted over surface of model, and the flask filled around and full of unsifted sand, that it may not pack too tightly : when flask is full and sand sufficiently packed it is leveled off and turned over, exposing base of model, and a pointed instrument passed around to make a slight bevel in the sand ; the sand is then slightly condensed with fingers and loose particles brushed away ; the model is then lightly tapped with the handle of an instrument, *or a gimlet is screwed into a small piece of wood inserted into the plaster.* in centre of base, when pouring model, for the purpose of loosening it in the sand, preparatory to throwing it out of an inverting flask, with a quick movement, or drawing it from the sand with the gimlet ; having a bed of sand on which the model will fall, prevents injury to it, when it is thrown from the mould.

16. What are the moulding flasks ? *Ans.* Wooden box, six or eight inches square, with top and bottom boards for die ; and a stout iron ring, four by two and one-half, for counter die, or of the form known as Bailey's moulding flask.

17. How should the plaster model be placed in the sand ? *Ans.* So that the center of plate to be swaged on it shall be directly under the metallic cone which is placed on base of die. in order to distribute the force of blows from hammer equally.

18. How is the plaster model protected in ramming the sand over and around it ? *Ans.* By having the sand at least an inch deep over the surface and around the sides, and compressed with the fingers.

19. What is the next step in obtaining a die ? *Ans.* To pour metal into the sand mould.

20. What metals are used for die ? *Ans.* Zinc and Babbitt metal, also fusible metal ; the latter for partial counter.

21. What metal is used for counter-dies ? *Ans.* Lead ; or for Babbitt metal, an alloy of lead and tin.

22. What is the heat required for melting zinc ? *Ans.* 770° F., but should not be overheated.

23. Where zinc is used, how many dies and counter-dies are necessary ? *Ans.* Two dies and two counter-dies ; the last for finishing.

24. How is the counter-die obtained ? *Ans.* By placing die in centre of flask, and building up sand around it until the swaging surface, or face only, is left exposed ; over this an iron ring, from half to three-qarters larger than face of die is placed and the edge slightly embedded in the sand ; the lead or alloy composing the counter-die metal is then melted and poured at the lowest posible temperature over the face of the die, and the flask filled as far as it is necessary to give a certain depth to the counter-die.

25 What is the composition of Haskell's Babbitt metal ? *Ans.* Copper one pound ; antimony, two pounds ; tin, eight pounds.

26. What is the composition of the counter die for a Babbitt metal die ? *Ans.* Lead, seven (6) parts ; tin one part.

27. What is claimed for the Babbitt metal die ? *Ans.* Non-shrinkage. (Is this all ?)

28. What are the advantages of zinc ? *Ans.* Little shrinkage, hardness, easy fusibility !

29. What commends lead as a counter-die ? *Ans.* Softness and low fusing property.

30. If die is too soft and becomes flattened in swaging, what is the effect on the plate ? *Ans.* It will bare too hard on palate, and rock.

31. What will correct this ? *Ans.* The use of a number of dies ; but the same will not correct the effect of great shrinkage in metal of die.

32. What will correct this latter defect ? *Ans.* The use of a die of softer non shrinking metal (Babbitt) following one of the harder shrinkage metals. (If the use of the Babbitt is good for the final swage, why not for the first ?)

33. Should the swaged plate fit the plaster model or the die ? *Ans.* The die. (Both.)

Here are twenty two questions and answers. There are thirty more opon the same subject, viz : the use of zinc dies, and many of them simply indicate the difficulties encountered in using zinc.

In the following 22 questions and answers I will cover the same ground, and guarantee, if carefully followed, the student will be saved all the petty annoyances from the use of zinc, and successfully make dies and swage plates that will fit, no matter how dificult the case.

1. What changes are necessary in the plaster cast for a full upper set.

Ans. The palate bone is the only portion of the upper jaw that never yields to pressure, whereas the alveola is liable to change, and in a majority of mouths does to a greater or less extent. Unless provision is made to prevent it the plate will rest on the palate and rock.

With a thin film of wax raise the surface from near the anterior ridge to near the posterior of plate.

2. Are the vacuum cavities, so commonly used, necessary ?

Ans. If the plate fits so that it comes in close contact with the membrane there will be all the adhesion that is necessary, no matter what the shape of gums and palate.

3. How should the model be shaped ?

Ans. Flaring, so it will drop from the mould, as it will find its way out, and not mar the mould as it is liable if lifted.

4. When are "cores" needed, how made, and how used ?

Ans. In a very small percent of cases, the process is so prominent the model will not draw from the mould without removing a portion of the sand. The "core" is made by oiling the surface of the model as far as undercut ; place on a slab, and apply ⅓ inch in thickness, equal paris of plaster and asbestos, the latter to prevent the core from shrinking and cracking, and breaking in using if more dies are needed ; dry thoroughly, and mould with the core in place ; as it drops from the mould replace and cast the die.

In partial lower sets, when needed, the core must be made in two sections ; the first extending from the posterior corner, two-thirds accross the model ; when hard, jar, loosen and make the other section from the other corner, to meet the first, and proceed to mould after drying as in the upper case. The core can be dried rapidly over the gas burner.

5. How should the moulding sand be prepared ?

Ans. Mixed with sweet oil to the same consistency as when water is used.

6. What are the advantages and disadvantages of oiled sand ?

Ans. It can be used many times without re-oiling ; there is no danger of "blow-holes" in the die, as when water is used ; can be packed hard, so as to make a better mould. It has no disadvantages.

7. What are the qualities requsite for dental dies ?

Ans. Non-shrinkage, hardness, toughness, smoothness, and melting at a low temperature.

8. Why melting at low temperature ?

Ans. So that oiled sand can be used. Zinc is poured so hot the oil is burned, and much oder results.

9. What alloy of metals has these qualities ?

Ans. Babbitt metal.

10. Are there different formulas for Babbitt metal, and what one is suitable for dental dies ?

Ans. There are many formulas, and in order to cheapen it, lead is substituted for the tin, which ruins it for this purpose. The formula which has stood the test is—copper, 1 part ; antimony, 2 parts ; tin, 8 parts ; melted in the order named.

11. If it lacks fluidity when melted, or is brittle, what is the remedy ?

Ans. Add more tin.

12. What is used for a counter-die for Babbitt metal.?

Ans. Lead, 5 lbs.; tin, 1 lb.

13. Why cannot pure led be used ?

Ans. It melts at a higher temperature than Babbitt metal, and when poured upon it adheres.

14. What precaution is necessary to further prevent adhesion ?

Ans. Coat the die with whiting, and stir the lead until it cools somewhat.

15. Is it necessary to put anything on the model before moulding ?

Ans. If the sand is freshly oiled, sometimes soapstone is necessary.

16. What sort of moulding rings are needed ?

Ans. Made of boiler-iron, 5 inches in diameter ; 3 inches high.

17. How should the mould be made ?

Ans. Place the model inside the moulding ring ; throw in the sand around the sides, placing the fingers on the model to prevent striking it, and pack with a potato-masher, using the handle ; keep adding sand ; no need of sifting, when packed hard ; use the other end of the masher over the top of the model ; fill even full.

18. How should the model be removed from the mould ?

Ans. Allow to drop out and if it holds, jar against the edge of the moulding box.

19. How should the die be arranged for casting the counter die ?

Ans. Sink into the sand, nearly to the border-line of the plate, and place a small ring, or a Bailey flask, over it.

20. Is there need of other metals for dies ?

Ans. None whatever.

21. How many dies are needed in any case ?

Ans. In many cases only one is needed, and when the second is required a second counter die is not necessary.

22. Are these methods new, or have they been long in use ?

Ans. They have been in use constantly forty years, and have greatly simplified the fitting of metal plates.

Is it not better to follow methods which produce practical results rather than cling to fine spun theories ?—HASKELL, (L. P.), *Ohio Dentical Journal.*

FILLING THE ROOTS OF SECOND MOLARS.

The following question has been sent us, with the request that it be answered in these pages:

"If a superior second molar, with pulpitis and pericementis to the extent of soreness is presented, and you decide to destroy and remove the pulp and fill the roots, how would you proceed in detail, the patient being in good general health and the mouth in fair condition?"

The second molar presents but few complications that are not found in the first. It is farther back in the mouth, and hence a little more difficult of access, but the roots or pulp chambers do not differ materially. The first symptom that demands attention is the pulpitis, for the pericementitis is dependent upon that. If there be considerable congestion of the pulp, it sometimes is not easy to destroy it without considerable pain. Usually, however, this will yield when the cavity of decay, which we will assume is the cause, has been cleaned out, and the pulp thoroughly exposed and bled. If not tincture of aconite will give relief.

Of course it makes a great deal of difference where the cavity of decay is. If it is in the occluding, or mesial surface there will be little trouble. If it is upon the distal aspect, the task will demand more care care and skill. In either case, the cavity should be thoroughly rinsed with warm water, using repeated douches. With enamel chisels the cavity should should be opened up so as to allow free access. The rubber dam should be applied, and the cavity dried out with the hot air blast. Usually this will obtund the tissues sufficiently to allow working without severe pain. If it does not, carbolic acid may be used, and the decayed tissue and debris should then be as thoroughly removed as possible. All pain will by this time usually have ceased. If it has, the pulpitis will give no further trouble. If not medication with aconite may be necessary. If there be excessive tenderness in the living pulp, this may be overcome by applying a solution of cocaine.

I know of no better devitalizing application than that recommended by Dr. Miller, in the July number of this journal. It consists of equal parts of arsenious acid and cocaine hydro-chlorate mixed into a paste with a sufficient quantity of carbolic acid. A little—a very little—of this should be placed in a minute cup of tin or lead, prepared as follows: From a sheet of taggers tin, or rolled tin, or lead, punch out, or with the shears cut out, a disk of sufficient size to cover the bottom of the cavity. Place it upon a piece of soft wood, and, with the rounded end of an excavator handle indent it until it has a cup-shaped depression. Put the arsenious acid mixture in this, an carry it to place over the exposed pulp.

My usual way is to cover this with a pledget of cotton dipped in chloro-percha. Miller recommends the oxy-sulphate of zinc, or even plaster of paris, and these no doubt have their advantages. But by the use of the protecting disk, pressure upon the exposed pulp by a cotton plug may be avoided. I leave this application in the cavity about forty-eight hours. It may probably be left longer without danger, but at the end of two days I usually find the pulp thoroughly devitalized, and without sensation.

At the end of this time the dressing is removed, using the rubber dam as before. The pulp chamber is opened thoroughly, and an antiseptic introduced. This may be one of the essential oils, or it may be our old and much abused friend, carbolic acid. I propose to coagulate the ends of the denintal fibrillæ, if it has not already been done, which is most probable. The cavity is then sealed up again for another two days, when it is once more opened under the same precautions as before. A delicate Donaldson barbed broach is now introduced into the root canals, turned a little and withdrawn, usually with the pulp clinging to it. I do this for each of the three roots —if I can—then introduce pledgets of cotton upon a delicate smooth broach, carrying them as near to the apex of the roots as possible, and again seal the cavity up, unless there be some urgent necessity for haste.

When I am ready for filling the roots I do it with chloro-percha, pumped into each with a smooth broach. When I am satisfied the root canal is full, I introduce a gutta-percha point, and that root is supposed to be effectually sealed for all time.

I said that I go to the apex of each of the three roots if I can. Unfortunately this is not always practicable. I may state it stronger than that, and say that it is not often possible. The conformation of the roots will not permit. There is usually but little difficulty in finding and reaching the apex of the lingual root, but the other two are not as accessible. In the first place, both the anterior and posterior buccal roots are frequently curved, the flexure usually being forward. This makes the anterior root canal hard to find and follow even if the opening be patulous. If the cavity of decay be upon the distal surface, it is absolutely essential that it be extended up through the coronal surface, quite to or past the central pit. The openings of all the roots must positively be uncovered.

If with a delicate broach I find that I cannot penetrate either canal, or for but a short distance, I seal the cavity up with gutta-percha, first introducing into it a small pledget of cotton wet with an antiseptic, and leave it for a week or ten days. By this time the contents of that canal will have sloughed away, or at the least will have separated from all attachments, and will have come away of its own accord, without putrefaction. I can then treat and fill the canals as well as possible. If they are too small to admit the most delicate broach, I have not much fear of their containing sufficient matter, even though it have putrescent possibilities, to cause any harm. I cannot believe that the contents of the dentinal tubuli ever become septic. The tubuli are too small to permit the entrance of putrefactive organisms, or if not, the amount of putrescible matter is not sufficient to produce septic complications.

To a much less extent is this true of those root canals that are too small for the entrance of a fine broach. If time enough be given for the sloughing of the canal contents, and if then they are subjected to the penetrating action of an antiseptic, and finally if the mouth of the canal be hermetically sealed with gutta-percha, I will take my chances with it. There is, in fact, nothing else to do, for my wildest flights of imagination do not reach to the point of successfully drilling out such roots as these, with any possible kind of a drill.

The posterior buccal root has even another possible complication. It is apt to be wide and flat, and very thin in the center, the canal having the same characteristics. At either lateral border of the root there may be a channel, while in the center it is very much constricted, or even obliterated. There may be chambers somewhere along the canal, which it will be utterly impossible thoroughly to clean out. There is absolutely no way of removing any pulp tissue from them except by the slow process of allowing it to disintegrate and slough out, antiseptics being excluded, for they would tend to prevent this. If the pulp chamber be open, this may sometimes be permissible, trusting to the penetrating power of antiseptics thoroughly to cure them afterward.

But with the utmost care and thoroughness there will be cases presented in which it is quite impossible to be sure of the condition of the roots. At least I find it so in my practice, for I am not one of those who can see to the bottom of an impenetrable root canal. But with thorough antiseptic treatment, I have little fear of any subsequent trouble from such roots.

It may be urged that all this is a very tedious and prolonged process. Well, if the dentist is not prepared to give to the case all the time and attention necessary, he had better not undertake it. The proper treatment and filling of the roots of a superior second molar tooth is a process that requires care, and patience, and skill, and he who does not possess enough of the last two to insure the first, can never take rank as a successful operator.—*Dental Practitioner.*

TEACHING TO PASS EXAMINATIONS.

The Harvard Graduates' Magazine for January publishes an an extended article on "Education in the Preparatory Schools," by C. F. Adams and W. W. Goodwin, Harvard graduates. This article contains twelve extracts from translations made by candidates at the last entrance examination at Harvard. These papers are defective. The English is bad and the translations are forced and but remotely represent the thought of the Greek or Latin author. The burden of criticism passed on these papers is based on the bad English employed. Sentences are incomplete, spelling is bad and the construction ungrammatical. The twelve extracts fairly represented nearly all of the entrance papers. The conclusions of the critics are that the preparatory schools fail to educate and merely attempt to give pupils sufficient equipment to pass an examination. Mr. Adams and Mr. Goodwin condemn the system and demand a change. Mr. Adams writes :

> May it not be that, after all, the Harvard entrance examination is, as now constituted, an omnipresent incubus on all correct preparatory instruction ? May it not tend to make skill in cramming supplant the art of education ? The principal of one prominent school in London has recently broken ground on this point—boldly declaring, as the result of his experience, that "good teaching is impossible if an examination by an outside person is to be prepared for."

He might well have said, examination by any person. Examination is no test of education. Education consists in mental development, acquirement of the power to reason and not in the ability to repeat lessons by rote, or mere training of the memory.

Mr. Adams proceeds :

> Might not better general results be attained (worse, in some respects, would scarcely be possible !) if, in the case of some dozen or twenty institutions which would agree to conform their whole system of courses and instruction to certain approved and specific methods, and a defined and definite programme of studies, the entrance examinations were wholly done away with and students were admitted on probation by certificate ? Might not the experiment be at least well worthy of trial ?

Of the teacher in preparatory schools, Mr. Adams says in this connection :

No longer compelled to cram, he might seek to educate. The college, on the other hand, would bring its direct influence to bear on the whole course of preparatory education, and not judge of the candidate's proficiency wholly by a superficial examination, the result of which, as the papers here printed already show, is largely a question of individual nerve-power in presence of an ordeal long anxiously prepared for. Is it not possible that, by this route, the seat of the existing trouble might, most quickly, as well as most effectually, be reached ? In any event it would, from the evidence presented, seem most unlikely that the existing standard as regards written English, whether in essays, or in translations from the classic tongues, could be affected for the worse. The fruits of the system now in vogue have been presented, sufficiently it is believed ; and, if the usual rule holds good, the present tree, judged by these fruits, is afflicted with a pronounced case of dry rot. It cumbers the earth.

Mr. Goodwin says :

Many good people who read the committee's report will believe that our mother tongue is singled out for neglect and contempt by the preparatory schools ; and some will think that the neglect of English is justified by the high standard of scholarship in Latin, Greek and mathematics, which (as they suppose) the college exacts of its candidates for admission. Nothing can be further from the truth than both of these ideas. The low standard in English is only one of the many results of the deplorable condition of our lower education for which neither the college nor the preparatory schools are directly responsible, though the consequences and the disgrace fall largely upon both, until a radical reform can be effected at the foundation, remedies applied at the top will be unsatisfactory and temporary. * * * There is no hope of a substantial change for the better until the elementary studies which now occupy the years from fifteen to nineteen are put back where they belong, so that young men can devote themselves in earnest to studies which belong to their age. * * * Until this change is effected, our high schools and academies must go on teaching full-grown young men what they should have learned as boys, and our colleges must go on teaching their students what they should have learned at school. All these studies are thus badly taught, because they are taught at the wrong time to pupils who have outgrown them. In the meantime the underpinning on which we propose to build our higher education is weak and unsteady. I have said that English is not the only sufferer under this state of things. As the latest comer it has perhaps fared worse than other studies in the struggle for existence into which all must enter. Such a test as has just been applied to our freshman class makes the deficiency in English obvious to everyone who knows what good English means. But a similar test applied to any other department would disclose a state of things in the lower ranks of scholarship which would be proportionally disreputable.

It is evident from the comments of Mr. Adams and Mr. Goodwin that the modern system of teaching for the purpose of enabling pupils to pass an examination has begun to have its effect on the colleges and universities. Scholarship has gone, and examination passing has taken its place. It may be proper to inquire how far the graded system is responsible for the decadence of scholarship. This inquiry may come very soon, but the duty now is to end at once the parrot system, the pass system, and devote attention to the education of pupils. Our educational system has broken down at the bottom. The reports from Harvard are not singular. Our system of education has become too highly organized and mechanical. The inventive spirit of the American has turned it into a machine, which turns out inferior work.

The schoolmaster of forty years ago, ruling over fifty pupils in one room, educated ; for his sole aim was to educate, instead of preparing the youth to pass a certain examination.—*Democrat & Chronicle.*

"IT IS A DIRTY BIRD," ETC.

The ill-considered remarks of many ignorant or prejudiced writers in American dental journals, are responsible for the low repute in which the American dental degree, and American ethics in general, are held in Europe. These articles are read there, and accepted as faithful delineations of professional affairs here. One never reads in their journals, or in the proceedings of their societies, articles assuming to give the true status of professional affairs, but which are either Jeremiads or Philipics, representing a state of things that would be disgraceful to a trades union. Many foreigners really are persuaded that American dental colleges are but a burlesque upon educational institutions. Not long since, Dr. Mitchell, of London, contrasted English and American teaching to the disadvantage of the former, and such a howl went up from English journals and English dentists, as would lead one to think that the constitution was in danger.

And yet there must be some points of advantage in American schools, or so many Englishmen would not come here to attend them. No one ever heard of an American who went abroad to study dentistry.

The editor of an English journal, in commenting upon one of these ill-advised and misleading articles, says : "One rises with the impression that whatever else the American schools may be, they are directly antagonistic to the interests of the profession at large. Why? Because many have been started, not with the idea of teaching, but simply with that of making money. They, therefore, do not care much about the quality of the men they turn out, so long as there is a quantity. And not only is the profession overcrowed with inferior men, but the very schools themselver enter into a competition with their own graduates, and this not on equal terms, for whilst the graduate is debarred by professional etiquette from advertising the school does so *ad lib.*"

Is it any wonder that foreigners get such an impression as is contained in the above, when that opinion was admittedly founded upon an article in one of our own journals, prepared by a dentist who was writing up the Examining Boards and writing down the colleges? Would the editor of any English journal admit such an article to his pages, think you? But American editors seem very glad to accept them.

Quite enough of these calumnies have appeared and it is time that a halt is called. There are very few men engaged in teaching in our schools, who receive a decent compensation for their services. There are a few schools that may easily be counted upon the fingers of one hand, and which are in the control of a few men, that make money. Every dentist knows what ones they are. But it is not claimed that these few schools no not offer proper facilities for study. The most of our colleges are connected with universities, and if there is any profit after paying the meagre salaries which their teachers command, it all goes toward building up the university, and enlarging its boundaries. There are very few dental colleges which have a private and speculative proprietorship, or in which it matters much to their teachers whether a student is graduated or not. To the great body of dental teachers, the work is purely one of love and professional beneficence.—*Practitioner and Advertiser.*

DR. W. C. BARRET said at the last meeting of the American Medical Association: "As regards the use of coagulating agents in the treatment of root-canals, he could not conceive of any objection to them."—*Cosmos.*

We faintly remember that others high in authority in dental therapeutics, have said that coagulants are worse than useless in treating root-canals, and yet we hear that dentistry is an "exact science"—*Western Dental Journal.*

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UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.

REPORT OF BINGHAMTON MEETING OF THE BOARD OF CURATORS, BY DR. M. B. STRAIGHT, CHAIRMAN OF THE BOARD.

At the Union dental convention, held at Binghamton in October, there were present many dentists from different parts of the State of New York. Among them were members of the Faculty, and a full quorum of the Curators of the Dental Department of the University of Buffalo.

October 26th, a meeting of the Curators was held in Parlor B., Hotel Bennett. All of the Faculty and ten of the curators of the school were present. Dr. A. P. Suthwick, of Buffalo, called the meeting to order, and upon nomination Dr. M. B. Straight, of Buffalo, was made chairman of the meeting.

The chairman, in a few remarks, stated the object of this, the first meeting of the Curators, aided by the presence of the Faculty, as one of inquiry and conference. He said that the proposed plan of organization of this school, gave the Dental profession of the State of New York an excellent opportunity actively to engage in the work of dental education, at least within this State.

Much has been said about raising the standard of dental instruction. Much has already been done by various institutions and and societies. Still more is to be accomplished in the future.

The Board of Curators of this new school, as men and dentists, fairly represent the profession of the State. They have the privilege to direct its curriculum, and to control the granting of its diplomas. Surely the college seems ready to meet the demands of the profession in the matter of education.

By request of the Chairman, Dr. W. C. Barrett gave a somewhat detailed account of the organization of the Dental Department by the University, in order to round out its course of instruction in Medicine and Surgery, by adding that of Dentistry. The move is a good one, and very successful thus far. The department has between forty and fifty students attending its first term. When the new buildings are completed, the opportunity for a high grade Dental School cannot be excelled.

Dr. Barrett handed to all present a proof of the proposed schedule of the curriculum, and described the general method of the teaching which they desired to see adopted. All of the members of the Faculty, by request of the Chairman, gave a sketch of what methods they proposed to adopt in their several branches of instruction, and each declared his intention to do all in his power to maintain a high standard of teaching, in theory, practice, ethics, and all that tends to a good professional education.

The Curators were then each in turn called upon, and all expressed themselves as of the opinion that the course of study presented for examination was an excellent one. Several of the Board of Curators made valuable suggestions as to the training of the students in practical work, ethics, etc. After a free discussion of the principal points, a motion was offered approving of the plans and methods proposed by the managers of the school This was carried unanimously.

The enclosed schedule will show the curriculum to be a very full one, which, if carried out to its full extrimity, should require four years. The course is graded, and each class must pass an examination before entering the next grade.

The class of Juniors and Seniors, this first term, being small, their schedule of work is printed together, the classes working alternately in the different rooms.

The general plan presented and approved by the Curators present, was as follows :

FRESHMEN YEAR.

The forenoons to be given up to studies in the Medical Department, the students taking the same course as the medical students in Anatomy, Physiology, Physics and Surgical Pathology, in the same class and with the same teachers.

The afternoons to be spent in the Freshmens laboratory, in the study of elementary mechanical technics, with lectures in mechanics.

JUNIOR YEAR.

This is mainly given up to laboratory work in Chemistory, Histology, Pathology, and the study of metals in the Dental Laboratory.

The lectures, aside from those in the medical department, which are continued, are those connected with these courses—Dental Chemistry, Metallurgy, Dental Anatomy and Histology, Pathology, and the first principles of Operative Dentistry. Practice in the Infirmary is commenced, the Juniors acting as assistants to the Seniors.

SENIOR YEAR.

This is principally given up to practical work in the Infirmary, with study of more elaborate mechanics—such as Continuous Gum Work, Crown and Bridge Work, Apparatus in Orthodontia, etc.

The lectures are in Pathology, Orthodontia, Dental Materia Medica, Therapeutics, Operative Dentistry, Embryology, Surgery, with Dental Practice and Ethics.

Especial attention is given to practical work in all the classes. Every Saturday is given up to Clinics, the forenoons at the Hospitals, in Surgery and Practice, the afternoons in the Dental Infirmary and Laboratory. The Clinical Demonstrations of the afternoon are at least one-half of them in Dental Mechanics. The Demonstrators are usually men from abroad, who are skillful in some special department. Each man is selected to give a clinic in that department only, thus avoiding two demonstrations exactly alike. Notice is given in advance of what the clinic will be, and the students receive instruction to prepare them to benefit by it.

A second laboratory is now fitted up, the unexpected number of students requiring this, so that the work of the Freshmen and the Juniors and Seniors can be separate, and first-term students will not be confused by giving attention to work in a higher grade, before they shall have mastered the more elementary part.

The Pathological Laboratory used is that of the Medical Department. The Chemical Laboratory is that of the Department of Pharmacy, work being carried on with students in those classes, but varied to suit the requirements of Dental Practice.

Dr. Barrett, speaking for the Faculty, urged the members of the Board of Curators to visit the school, to advise, criticize, or take any steps, which in their judgment seemed best for the success of the school.

Before adjourning, the request was made that a report of the meeting shoould be sent to the absent members of the Board of Curators, and the chairman was appointed to make and send such report to each one.

DR. HERBERT A. BIRDSALL.

In the death of Dr Birdsall, which occurred in Buffalo early in December, the dental profession lost a man whose place it will be difficult to fill—a loss shared in largely and felt most keenly by the recently organized dental department of Buffalo university. Zealous in everything to which he put his hand, in this particular work he became an enthusiast. How best and most speedily to further its work and interests were uppermost in his mind, and to this end he labored intelligently and incessantly with his associates in the governing and teaching staff. He readily impressed the classes with his earnestness and ability, and presented the subject-matter of his department in a laaguage and manner that bordered on the classic.

Dr. Birdsall was more than dentists generally had known him, a gifted and accurate speaker, a close student of art, and a thinker and writer of reputation on economic subjects. Nature, study and travel had made him a most companionable man.

Suitable action was promptly taken by the several local bodies at Buffalo, including the faculty of the dental college, and the remains accompanied to the depot, whence they were taken to the home of his youthful days in Westchester county.

HUMAN DENTAL ANATOMY—A COLLECTION.

On a recent visit to Ward's Natural Science Establishment, we were shown by Mr. Charles H. Ward, head of the "Homo" department, what is probably the finest collection of material illustrating human dental anatomy now to be found in this country. It is the work of nearly a full year, begun with a well matured and definite notion of what a complete human dental collection should be, and continued up to the present time with the determination to attain that end regardless of cost, whether in time or money. The result conforms to all that had been anticipated, and in a number of particulars expectations are more than realized. Whether studied with reference to the number of specimens, no two of which closely resemble each other, their variety, source, usefulness for dental museum or lecture purposes, the collection is at once numerically complete, comprehensively varied, uniquely arranged, and in many respects typical to a degree. Following is a detailed description substantially as it will appear in the forthcoming catalogue:

Human odontological series, comprising various preparations of the superior and inferior maxillaries, among them complete deciduous and permanent sets arranged in two dental arches, as in life; a similar set of the calcified portions of the developing teeth; a series of about twenty-four skulls showing the growth and development of the individual teeth from the foetal period to that of old age. In addition to this there is

(a). Collection of inferior maxillaries from the foetal stage to that of advanced years.

(b). Set of four skulls exhibiting the "four degrees of wear" of Broca.

(c). Suite of typical human skulls, ancient andmodern, of various races, selected and arranged with reference to their dentition, including head of mummy from Grand Cairo, Egypt; skull from ancient tomb of Sardinia, one of Florida mound builder, negro, etc.

(d). Collection of skulls illustrating numerous irregularities of human dentition, the horse-shoe, V–shaped, flattened and vaulted arch; the ravages of syphilis and ordinary alveolar abcess; pyorrhea alveolaris; corrugated enamel, etc.

(e). Collection of malformed and otherwise abnormal teeth, each on an independent pedestal for museum and lecture room pnrposes, selected from among several thousand sub-collections from various localities.

(f). Several cases of partially suppressed teeth in otherwise nearly perfect jaws.

(g). Two of the finest preparations of the Vth nerve (modelled upon the actual skull) ever brought to this country.* Also a magnificent preparation of the cranial nerves and vessels complete.

To clarify wax, melt in hot water bath; then remove from water bath and bring to a slow boil on the stove. Into the boiling wax break a fresh egg, and stir three or four minutes till the egg is thoroughly cooked. Strain through a piece of cheese cloth to remove all pieces of egg, and you will have your wax as clean and pure as when brought from the dental depot.—Harvey (J. E.), *Dental Office and Laboratory.*

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* Purchased by the Buffalo School, but will be replaced immediately by fresh importations.

CALIFORNIA BOARD OF EXAMINERS.

Drs. J. L. Asay, San Jose, president; S. E. Knowles, San Francisco; Jno. C. McCoy, Santa Ana; F. F. Tebbets, Sacramento; W. F. Griswold, San Francisco; Thos. Morfew, San Francisco; J. D. Hodgen, San Francisco, Secretary.

Two of the twelve candidates for examination at the last meeting passed.

AMERICAN MICROSCOPICAL SOCIETY PRIZES.

The following sums of money have been placed at the disposal of the society, to be given as prizes for the encouragement of microscopical research, and Profs. Gage, Kellicott and Seaman, were appointed a committee to prepare the conditions on which they should be granted. The competition will be open to members of the society and to those who make application for membership, before submitting their papers to the committee.

Two prizes of fifty dollars.
Two prizes of thirty dollars.
Two prizes of twenty-five dollars.
Two prizes of fifteen dollars.

The committee have prescribed the following conditions:

One prize of fifty dollars for the best paper which shall give the results of an original investigation relating to *animal* life, made with the microscope, and not less than 3000 words in length. The methods by which the results were obtained to be given in full.

One prize of fifty dollars for the best paper which shall give the results of an original investigation made with the microscope and relating to *plant* life, not less than 3000 words in length. The methods by which the results were obtained to be given in full.

Two prizes of twenty-five dollars each for the second best papers on animal and plant life, respectively, on the above conditions.

The papers, drawings and specimens entered for the above prizes, to be submitted to the committee on or before July 1st. 1893, and the papers and drawings, to be published in the proceedings.

One prize of thirty dollars for the best six photomicrograghs on some subject in animal or vegetable histology whose structural features are to be illustrated by the photomicrographs of the following amplification, viz. 50, 150 and 500, two of each. These are to be made by transmitted light, printed on albumen paper from untouched negatives, which with the specimens from which they are made, are to be submitted with the pictures to the committee.

One prize of thirty dollars for the best collection of six mounted slides illustrating some one biological subject. These slides must be accompanied with a full description of the method of preparation of the specimens.

Two prizes of fifteen dollars each, for the second best collection of photomicrographs and slides respectively, on the conditions above stated.

All photographs and mounted slides for which prizes are given are to become the property of the society. The object of these prizes is to stimulate and encourage original investigation in the Biology of North America, and if additional information is desired it may be obtained of the undersigned committre on prizes.

S. H. Gage, Ithaca, N. Y.
D. S. Kellicott, Columbus, Ohio.
Wm. H. Seaman, Washington, D. C.

ODONTOLOGICAL SECTION—INTERNATIONAL MEDICAL CONGRESS.

The Eleventh International Medical Congress will be held in Rome, 1893, beginning the 4th of September and continuing until the 24th of October.

The Committee on Organization, following the precedent established in London 1881 has provided for a section of Odontolgy. As America has contributed pre-eminently to the scientific progress of Dental Surgery it is hoped that the dental profession in America will be creditably presented : all reputable practitioners are entitled to membership in this section.

The time chosen is the most delightful of all the year, and to those who have never visited the "Eternal City" the meeting of the Congress will afford a rare opportunity.

The North German Lloyd Steamship Co. has an established line of first class steamers to Genoa making the passage in less than eleven days. It proposes to reduce the fare to Genoa by twenty per cent and the return trip by ten per cent to those attending the Congress.

The French Railway Co. has also offered a reduction of fifty per cent on its fare.

Dr. Norman W. Kingsley, 115 Madison Avenue, New York, has been appointed Member of the American National Committee for the promotion of the interests of the Odontological Section. All communications in reference to that section should be addressed to him.

PELLETS.

"And the prophets shall become wind, and the word is not in them; thus shall it be done unto them. *Jeremiah V*, 13.

Dr. Maxwell says: To remove iodine stains, apply strong ammonia; to remove nitrate of silver stains, apply iodine, then ammonia. This "goes", for we have tried it.

It was an old New England judge who once interrupted a lawyer in the midst of a spread-eagle speech by saying: "Mr. Blank, I wish you would take a few feathers from the wings of your imagination and put them in the tail of your judgment."

The joint meeting of the first and second district dental societies, December 13th, was a great success. The essayist of the occasion was Dr. Frank French, Rochester, who discussed Orthodontia. Dr. L. D. Sheppard, Boston, addressed the gathering on things congressional, and then everybody present "collated."

One day a Lie broke out of its inclosure and started to travel.

And the man who owned the premises saw it after it had started and was sorry that he had not made the inclosure lietight.

So he called his swiftest Truth and said:

" A Lie has gone loose and will do much mischief if it is not stopped. I want you to go after it and bring it back, or kill it!"

So the swift Truth started out after the Lie.

But the Lie had one hour the start.

At the end of the first day the Lie was going lickety-split. The Truth was a long way behind and it was getting tired.

It has not yet caught up.

And never will.—*The Coming Day.*

BOOKS.

Descriptive Anatomy of the Human Teeth, by G. V. Black, M. D., D. D. S. Second edition. Philadelphia: Wilmington Dental Manufacturing Company. Pp. 161.

The first edition of Dr. Black's work made it standard, and with the changes in and additions to the edition under notice it is likely to make its place among indispensables even more secure. While these changes and additions are neither great nor numerous they add materially to the value and convenience of the volume. The original design has been rendered more complete in detail in verbal alterations that better fit it for text book purposes, also for reference. The section on nomenclature has been changed to the extent of adding explanations of phrases and words, and for genera convenience a glossary has been included. Some of the illustrations that called for such treatment have been improved by redrawing, and the number of illustrations augmented by one. The book is the best extant on that phase of the subject treated therein and is already on the list of text books recommended by the several colleges for the use of students. The make-up is all that author and reader could desire, and in giving it to the profession in this form the Willmingtons have scored another mark to their credit as book makers.

Methods of Filling Teeth, by Rodrigues Ottolengui, M. D. S. Two hundred and thirty-six illustrations. Philadelphia: White Dental Manufacturing Co. Pp. 200.

Everybody in dentistry reads the *Cosmos*, therefore everybody in dentistry has read more or less carefully Dr. Ottolengui's admirable series of articles on methods of filling teeth. Notwithstanding this familiarity with the articles in question, it will be advantageous to have them not only in order, but close together, with those necessary adjuncts for reference, a table of contents and an index. Like everything else from the author's pen, these chapters are clearly written ; more than that, they are by a man who knows practically whereof he speaks. Those who have acquired by long experience the information embodied in these pages will find themselves renewing their youth in more instances than one ; while those still engaged in acquiring both skill and practice, will find in ninety-nine cases in a hundred descriptive matter and illustrations to fit the difficult case in hand. Whether in detailed description, profuse illustration, mechanical execution, the work is alike a great credit to author, publisher and the profession.

MANIPULATION OF THE MICROSCOPE, by Edward Bausch. Second edition. Rochester: Bausch & Lomb Optical Co. Pp. 118.

Some of the subjects have been enlarged upon in this edition, and others entirely rewritten. The instrument is fully described, also its manipulation both for test and practical work. Many new cuts have been added.

QUESTIONS AND ANSWERS FOR DENTAL STUDENTS, Part I, Freshman Course; II, Junior Course; III, Senior Course. By F. J. S. Gorgas, M. D., D. D. S. Baltimore: Snowden & Cowman. Pp. 60, 92, 80.

In these separately bound parts the author goes over the subjects usually taught in dental college courses, and asks and answers the many questions likely to occur or be presented to the student during his three years attendance. As a syllabus of the subject matter of dentistry they seem to fulfill the requirements.

QUESTIONS AND ANSWERS, by Gustavus North, A. M., D. D. S. Pp. 67.

Similar to the preceding, but touching upon fewer topics. An index to questions and blank forms for notes are added.

ANGLE SYSTEM OF REGULATION AND RETENTION OF THE TEETH. Third edition, by Edward H. Angle, D. D. S.

An illustrated pamphlet of 51 pages by the Wilmington Company. The pages are few, but because of their value for reference they should be compassed by cloth. When the paper cover becomes dog-eared its trip to the waste basket is apt to be quickly made.

AN ARTIST IN CRIME, by Rodrigues Ottolengui. New York: Putnam & Co.

So far as we know this is Dr. Ottolengui's first venture in the field of general literature, and if one may judge by personal reading and feeling, a successful one. The plot is of great strength, the story forcefully told, the interest maintained throughout and the climax withheld till the very last page. Notwithstanding that in detail it is all but photographic no one of them is lost sight of by the author, and the reader is made to do a large amount of speculating as to the outcome long before reaching the close of the last chapter.

PLAIN TALK ABOUT THE TEETH, by George H. Chance, D. D. S. Portland, On.: Bolles & Co Pp, 47.

For distribution among patients.

PEARSON'S APPOINTMENT BOOK, published by Pearson & Co., Kansas City Dental depot.

A specially prepared copy. Many thanks.

MEMORANDA.

Also specially prepared, this time for those connected with the University of Buffalo. Thanks again.

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